BRAITHWAITE'S RETROSPECT.

VOL. XXX. JULY—DECEMBER, 1854.

THE

RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

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A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOLLOWING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

FEVER.—Be careful of your prognosis, when the nervous symptoms in fever preponderate at an early period of the attack, especially in the wealthy, who cannot bear wine so well as the poor. The more the secondary affections of fever are *anatomical*, the greater will be the use of stimulants; and conversely, the more they are neurotic, the less will be the use of stimulants. (Dr. W. Stokes, p. 10).

When the tongue is dry and brown, head not very hot, respiration short, frequent, and irregular; and when added to these there is delirium, more or less violent, give twenty-five minims of chloroform in a draught, to be repeated in an hour. This may be repeated in a few hours if necessary, and if the pulse be watched, may be continued every second hour for some time. The *inhalation* of chloroform is useless in these cases, and may be followed by convulsive movements. (Dr. Gordon, p. 18).

Yellow Fever.—Give quinine in the early stage of depression, promptly, boldly, and in large doses. The first stage is one of diminished vital energy which quinine raises. Give 10 to 20 grains every second or third hour. Four or six hours should never elapse between one dose and another during the stage of depression; and, when necessary, give it up gradually. (Dr. W. J. Cummins, p. 17).

CANCER.—Apply a frigorific mixture of ice and salt, for four minutes, so as to destroy the vitality of the cancer cells. Repeat this every few weeks or month. This may not remove the hardness, nor the tumour of scirrhus, but may destroy its life and its malignancy. (Dr. J. Arnott, p. 354).

GOUT.—Give the following: ℞. Extract. acet. colch. gr. j.; pulv. Doveri, gr. ij. Ft. pil. ter die sumend. Pulv. Doveri, gr. v., omni nocte sumend., et pulv. rhæi cum magnesiâ ℈ij. omni mane. (Dr. Hughes, p. 20).

Iodide of potassium dissolves lithate of soda very readily, but not lithic acid. Therefore give this medicine in cases of gout, except

during the acute attack. Give 5 or 8 grains two or three times a day for a short time; or one grain every day in one or two doses for some weeks or even months. (Mr. T. S. Wells, p. 23).

Rheumatism.—When delirium occurs in acute rheumatism it is of grave import. Examine the heart carefully,—there is very likely to be pericarditis upon which the delirium depends. Bleed generally or locally according to circumstances, give calomel and opium, with salines and colchicum. Blister the cardiac region well, both in front and back. At the same time support the patient with broth, and even wine if necessary: always remembering that many of these apparently inflammatory diseases are asthenic and not sthenic. (Dr. Watson, Dr. C. M. Durrant, p. 310).

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—Begin with sulphate of zinc in small doses, (gr. i. to gr. ij.) and gradually increase the dose to five or eight grains. Sometimes liquor arsenicalis is very efficacious: give three minims to a child and five or six minims to an adult in a bitter infusion three times a day. (Dr. Barker, p. 37).

Delirium Tremens.—In delirium tremens arising from the *leaving off* of stimulants, which have been habitually taken in excess for a long time, give opium and moderate doses of alcohol, with good broth and nutritious diet. But in delirium tremens of a sthenic character, arising from the direct action of alcohol on the brain, taken lately but not habitually in excess, cases which are inflammatory and congestive, avoid both opium and alcohol, and try chloroform; but be careful of the above distinction in the two kinds of cases. Give half a drachm of chloroform in a draught every two hours. This may be increased to a drachm; but watch the respiration, and if slow and laboured, give a little compound spirit of ammonia, to rectify the sedative effects of the chloroform. We have seen chloroform given in this way in hysteria, have rather a serious effect on the respiration, the same as from inhalation. All bad effects, however, are rapidly obviated by a drachm of compound spirit of ammonia in water, and repeated in a quarter or half-hour if necessary. (Dr. M'Dowell, p. 37, and Edit. *Retrospect*).

Epilepsy.—As long as an animal is fully under the influence of chloroform no convulsions can be produced. Chloroform controls and modifies the convulsions of epilepsy, and also the delirium of epilepsy, as well as those convulsive jerks of the muscles of both upper and lower extremities which are so distressing. Chloroform also has a marked power over puerperal convulsions; also over the convulsions of infants, and laryngismus stridulus. (Dr. R. B. Todd, p. 32).

Give an infusion of the inner bark of the black elder, (sambucus nigra). It acts as a hydragogue, and probably eliminates the poison from the blood which causes the epileptic fit. For directions how to prepare and give this medicine, see page 33. (M. Bogetti).

Nerves, *Excision of Tumours of (Neuroma).*—When a tumour pressing upon or in any way implicating a nerve, has to be excised or dissected out, make a clean incision of the nerve either above or below the tumour before the operation, as this will not only considerably lessen the pain, but also the subsequent inflammation. The consequent paralysis lasts only a short time, as the divided nervous extremities soon re-unite. (Mr. Bickersteth, *Monthly Journal*, Aug., 1854, p. 121).

Tetanus.—Apply a solution of morphia to the wound instead of giving it internally. The following is a good formula: Hydrochlorate of morphia, one scruple; tincture of hyosciamus, two drachms; water, three ounces. Moisten a piece of lint with this solution and keep it on the wound. (Dr. E. Hodges, p. 35).

Chloroform completely relieves the spasms for the time. The difficulty is to know how far to push the remedy: it may be continued for several hours. (Dr. Hassall, p. 35).

AFFECTIONS OF THE RESPIRATORY SYSTEM.

Hooping Cough.—Nitric acid arrests the paroxysms and removes the hoop. It is a tonic, and supplies the blood with nitrogen, which removes or neutralises the excess of fibrine existing in that fluid at the time, and which is a great source of danger. Give dilute nitric acid. Twelve drachms of the dilute acid in a four ounce bottle with syrup—a dessert-spoonful to be taken every few hours by a child under two years old. For an infant give about a teaspoonful. (Dr. G. D. Gibb, p. 53, and *Association Med. Journal, July* 28, 1854, *p.* 677.)

Laryngotomy.—Place the patient on his back and completely expose the crico-thyroid membrane by dissection before opening the larynx. This is necessary, as an artery (the inferior laryngeal) is often passing this space, and requires a ligature. Then make a vertical incision into the larynx, through the crico-thyroid space, and insert a full sized trachea tube. It is sufficient, in dyspnœa arising from causes in the larynx *of the adult*, to make the opening in the crico-thyroid space, but not so *in the child.* In the adult, any inflammatory effusion, or thickening, arising from acute affections of the larynx, takes place in the submucous tissue, and is more local. In the child, it takes place more on the free surface of the mucous membrane, and spreads downwards, thus becoming tracheal as well as laryngeal. Laryngotomy, therefore, is not so applicable to the child as to the adult. (Mr. J. Tufnell, p. 174).

Pneumonia.—In sthenic pneumonia the sputa are of a rusty red colour, viscid, and adherent. In asthenic, or typhoid pneumonia, the sputa are more like *prune-juice, i.e.*, darker coloured, and less viscid than in the former. A very interesting point is, that, in many cases of pneumonia, the chlorides either disappear entirely or nearly from the urine, while there is a corresponding excess in the fluid poured out into the lung. The chlorides disappear from the urine up to hepatization of the lung, and as soon as resolution commences the chlorides begin again to appear in the urine. Therefore, in cases of pleurisy and pneumonia always *test the urine for chlorides*, as follows:—Add a few drops of nitric acid to a portion of urine in a test-tube, and then a few drops of a solution of nitrate of silver. If chloride be present, a dense white precipitate of chloride of silver, which is insoluble in acids will fall. If chloride of sodium be altogether absent, no precipitate will occur. (Dr. R. B. Todd, p. 51).

Phthisis, *Night Sweats of*:—Give the following draught at bedtime: ℞. Acid. gallic. gr. vij.; morphiæ acet. gr. $\frac{1}{8}$; alcohol q. s. (a few drops); syr. tolutan. ℥ss.; aquæ. ℥j. The night-pill of the Brompton hospital is as follows: ℞. Acid. gallic. gr. v.; morphiæ hydrochlor. gr. $\frac{1}{8}$; mist. acaciæ. q. s. Ft. pil. ij. (Mr. Hutchinson, p. 50).

Give gallic or acetic acid. Dip the night dress in sea-water, or salt and water, and dry it before using. But the best remedy is four grains of oxide of zinc at bedtime, combined with a little henbane or hemlock.

Diarrhœa of.—Give the trisnitrate of bismuth, combined with gum and magnesia, or with Dover's powder.

Cough of.—Mix one part of chloroform with three parts of spirits of wine, and let the patient inhale when necessary, but with caution, and under medical direction. The inhalation of camphorated spirit is often sufficient, or even the vapour of hot water, or infusion of hops. Sometimes frequent deglutition, as the swallowing a little oil, will relieve the cough. Sometimes four minims of tincture of aconite is a good palliative.

Profuse Expectoration of.—To check this give creasote, pyro-acetic spirit, infusion of pitch, or balsam of tolu; but by far the best remedy is petroleum or Barbadoes tar, which often moderates the cough and expectoration remarkably. (Dr. Theophilus Thompson, pp. 43, 44).

Tracheotomy.—To facilitate this operation both in epilepsy and other cases, make use of Dr. Marshall Hall's scissors, figured at page 385. These scissors are made so as first to divide the skin over the trachea, and are then pushed into the tube and the blade *opened* so as to stretch and cut as much as may be required. An instrument called a cage is then introduced so as to keep the orifice open.. (Dr. Hall, p. 384).

When the trachea has to be opened to *extract a foreign body*, dont be satisfied with making a mere slit, but make a sufficiently large valve-like aperture, larger than the size of the body which has passed. (Mr. J. Hilton, p. 176).

Impromptu Tracheotomy.—If you are called suddenly to a case requiring tracheotomy, without proper instruments, take a pair of pointed scissors, and, the integuments having been divided with a lancet or sharp penknife, pierce the trachea with the scissors, and separate the blades. You may then insert the handle of a teaspoon and turn it one quarter or half way round. (p. 175).

AFFECTIONS OF THE DIGESTIVE SYSTEM.

Cholera.—For a valuable paper on the pathology and treatment of cholera by Dr. Cormack, see page 359.

Do not arrest the purging, it is eliminatory. Give turpentine and yeast as follows: yeast a tablespoonful, oil of turpentine a teaspoonful, cold water or barley water two teaspoonfuls. Give this dose every second, third, or fourth hour according to circumstances. (Mr. L. F. Crummey, p. 370).

Dont give opium. Give calomel freely, combined with camphor. Exhibit oxygen gas. This gas is easily given by shaking powdered chlorate of potash on a heated surface, and making the patient inhale the fumes. Or mix chlorate of potash with one-sixth its weight of black oxide of manganese, and throw the mixture on an iron shovel, heated to dull redness. (Dr. T. O'Brien, p. 371).

Make a strong decoction of the bitter bush, eupatorium, as follows: boil about two drachms in a pint of water, and give a small tea-cupful, cold, every half-hour. It may be given alternately every half-hour with some alkaline or saline powder. (Dr. W. E. Stulo, p. 371).

Diarrhœa.—When the ordinary remedies for diarrhœa fail, try the following: ℞. Ether. chlorici ℥ij.; speciei pro conf. arom. ℥ss.; mist. cretæ comp. ad ℥vi. Ft. mistura. Take a fourth part every half-hour till relieved. (Mr. G. B. Mead, p. 76).

Dyspepsia.—In cases of irritative dyspepsia of some standing, when the digestion is painful and imperfect, give from fifteen to twenty minims of lactic acid in half an ounce of water at meal times Lactic acid may also be used to improve the tone and power of the stomach generally. (Dr. Handfield Jones, p. 65).

Epigastric Neuralgia.—Give the following: Infusi valerianæ, infusi cinchonæ, āā ℥iij. Sumat ℥i ter in die. Also apply a small blister over the part and dress it with acetate of morphia ointment, gr. j. to ℥j. (Dr. Lees, p. 62).

Fissured Anus.—Introduce a speculum into the anus so as to bring the fissure into view. Then make an incision through the ulcer beginning a little above its upper edge and carrying it through its base to a little below its lower edge. These fissures are in reality narrow oval ulcers at the margin of the anus, which look like fissures in consequence of the plicated arrangement of the end of the rectum. In slight cases touch the fissure with a solution of the nitrate of silver, a drachm to the ounce, or touch it slightly with the solid nitrate. This should be done every second or third day soon after the morning motion; and a bit of dry lint applied well to the fissure after each application. The bowels should be kept open by rhubarb or some mild laxative. (Mr. J. Hamilton, p. 211).

In those very painful ulcerations and fissures of the anus, which used formerly to be relieved by division of the sphincter muscle, Mr. Copeland merely divides or cuts through the mucous membrane by a slight incision; a few of the muscular fibres of the sphincter are necessarily also divided. (Mr. T. B. Curling, p. 213).

Fistula-in-Ano.—The opening into the rectum from the fistula will generally be just above the internal sphincter, although the probe may easily pass upwards to a considerable distance outside the gut; about five or six lines high up will generally be the situation of the orifice through the bowel,—we might, therefore, almost detect it with the eye by separating the sides of the anus sufficiently. In operating, pass a director through the fistula into the rectum, and where the internal aperture is near the anus, the director, by by being a little curved, can be brought out again at the anus. Then pass a probe-pointed bistoury along the director and divide all the parts between the two openings, including the sphincter. Then stop up the wound for forty-eight hours with dry lint. If the wound heal indolently touch it with a solution of nitrate of silver, (ʒj to ℥j.) In blind internal fistula it is best to make it a complete fistula by making an opening at the side of the anus in the hard, tender, red part, and then operate as for complete fistula. Sometimes the external point where the fistula exists is not well marked; in this case a probe or curved director can sometimes be passed through the opening *from the rectum* till its point is felt through the skin, so as to guide the knife accurately. In blind external fistula a probe bistoury with the front of the end a little sharp and projecting is passed up the fistula till its point presses against the wall of the rectum, the nail of the fore-finger in the rectum scratches against the end of the bistoury till it pierces the bowel, and then is drawn downwards with the finger on the end, dividing the sphincter and all the parts below it. (Mr. J. Hamilton, p. 188).

To ascertain whether the fistulous opening comunicates with the rectum, inject a little tincture of iodine up the orifice, and at the

same time introduce a finger up the rectum. If there be a communication the finger will probably be stained with the tincture. (M. Limauge, p. 193).

Hematemesis.—When acetate of lead and opium, turpentine, gallic acid, tannin, &c., fail, we may try ergot of rye; give a drachm and a half of the powder divided into eight doses—each dose every four hours. (Mr. C. Neate, p. 70).

Hemorrhoids.—Cauterize the base of the tumour by means of caustic potash and lime placed in the grooves of a particular kind of forceps described in M. Amussat's paper, (Dr. Amussat, jun., p. 193).

In many cases the Vienna caustic may be used. Before using this, or nitric acid, or any other caustic, it may be an advantage to ligature or encircle the tumour with M. Jobert's hemorrhoidal instrument, figured at page 205. When this is applied it will effectually prevent the caustic acting on the contiguous parts, and by its strangulation, may prevent much of the pain which would otherwise be caused. (M. Jobert, p. 204).

Excision of internal hemorrhoids would be dangerous if we could not control the bleeding vessels. This, however, can now be done, and, therefore, the danger is proportionably less. Excision of internal piles may be performed with safety, and is more expeditious than nitric acid, and, if properly performed, as safe. (Mr. H. Lee, p. 210).

Two methods may be used for internal piles: one, that of absolute removal by the heated platinum wire; the other, that of destroying the substance of the tumour *from the surface* by the application of a *disc-shaped* coil of incandescent wire. Small isolated and prominent internal piles may easily be removed across their base; but when the mass is larger, it is best to cauterize it deeply, from the mucous surface. (Mr. J. Marshall, p. 206).

In ligaturing piles use *twine* rather than silk. In all operations on or about the rectum and anus, remember Mr. Copeland's golden rule, "*cut skin and tie mucous membrane.*" (M. I. B. Brown, p. 304).

Hernia.—Before operating for hernia read Mr. Luke's opinion on the "Strangulation test," at page 184.

Strangulated.—If you use opium, do it promptly and decidedly; give the following pill at once: Morphiæ muriatis, antim. potass. tart., of each one grain; and give a quarter of this dose every fifteen minutes for four doses. Then, if necessary, put the patient into a warm bath and attempt the reduction. (Mr. R. Hey, p. 185).

Apply ice associated with permanent pressure. Begin with cold water and then with ice. Salt may even be mixed with the frag-

ments of ice, and an elastic bandage is to be applied so as to compress the part. The pelvis is to be kept elevated. (M. Baudens, p. 323).

Jaundice.—When arising from an excessive secretion of bile, *turpentine* is often very useful. Give one drachm every two or three hours It may be mixed with nitrous spirit of ether to avoid strangury. (Dr. Gordon, p. 79).

Œsophagus, *Stricture of.*—If caused by an aneurisim pressing on the trachea and nerve-trunks, the voice will be *stridulous*, and paroxysmal attacks of suffocative dyspnœa will occur. If caused by an abscess, the voice will not be lost. If caused by malignant disease, the recurrent laryngeal nerves will soon be involved, and *paralytic aphonia* will result, although the larynx may not be affected. (Dr. Risdon Bennett, p. 179).

Prolapsus Ani.—Dupuytren's method of treating prolapsus ani was by excising radiating folds of skin round the anus, while Guersant used the actual cautery. Duchaussay thinks these acted only by stimulating the sphincter muscle, and, therefore, he applies strychnine. Apply one-sixth to one-third of a grain of strychnine to a blistered surface in the neighbourhood of the anus. Repeat this occasionally according to its effects. (M. Duchaussay, p. 210).

Apply nitric acid as follows: wipe the acid down the protruded part in separate streaks or tracts vertically from the sphincter down to the lowest portion of the gut; then replace the protrusion and allow no motion for two days. You may re-apply the acid at intervals of seven or ten days if necessary. (Dr. M'Dowel, p. 209). Nearly the same practice is followed by Dr. Fleming. (See p. 206).

Stomach, *Dilatation of, with Obstruction at the Pylorus.*—A good diagnostic symptom of disease of the pylorus is the vomiting of sarcinæ with a peculiar yeast-like substance. Give half a drachm of sulphite of soda in an ounce and a half of water every four hours. If necessary increase the dose to a drachm. The sulphite of soda will destroy the sarcinæ, but will not act upon a diseased pylorus. Where the disease, therefore, is simply from sarcinæ give the sulphite, but otherwise, it is not to be depended upon. (Dr. R. B. Todd, p. 65).

Stomachic Bitters, Tonics, and Aperients.—*Quinine* strengthens digestion, especially when the stomach has been injured by drinking, or in persons exhausted by overwork. It does harm in organic disease, with a furred tongue, and when the urine throws down lithic acid, or lithate of ammonia. Give quinine half an hour or an hour before meals.

Calumba.—This is a sedative as well as a tonic.

Gentian and Chiretta stimulate the liver, as well as act as tonics on the stomach; whereas, quinine and quassia sometimes check the secretions of the liver, and are therefore not adapted to cases where the secretion of bile is defective.

Iron.—The citrate or ammonio-citrate mixed with a little bicarbonate of soda or potash, have the same effect as Griffith's mixture (the mist. ferri co.) Iron medicines may be given at meal-times.

Castor-Oil acts very mildly on the large intestines, and is therefore useful in convalescence from typhoid fever, in dysentery, and whenever we wish not to act too much on the large intestines.

Senna acts chiefly on the small intestines, and increases the secretion from the mucous membrane, and also that of the liver. It is, therefore, one of the best aperients in bilious affections.

Aloes and Colocynth act chiefly on the large bowels, and are, therefore, the best purgatives in disorders of the stomach. (Dr. G. Budd, p. 63).

Teeth, *Cement for making them insensible to pain.*—Previous to stopping teeth permanently with any metal, use a cement composed of Canada balsam and slaked lime, which is introducod into the hollow tooth like a pill. The most sensitive tooth may, by repeating this application, be made quite insensible to the most severe operative proceedings. (Mr. P. Clark, p. 182).

Toothache.—Sometimes this is owing to the stomach and is not relieved by any remedy, not even by the extraction of the tooth. In this case try an emetic of ipecacuanha. (M. Fredericq, p. 182).

Tænia.—When the usual remedies for the expulsion of tape-worm fail, try *tatzé* and *saoria.* (M. Strohl, p. 74).

AFFECTIONS OF THE URINARY ORGANS.

Bladder, *Irritability of.*—Is the irritability direct or spmpathetic? Whilst finding out this, you must use palliatives. Camphor and opium are the best. Three grains of camphor, with half a grain of opium may be given two or three times a day, in the form of pill. (Dr. Bence Jones, p. 97).

1. *As a consequence of Gonorrhœa.*—Give iodide of potassium, and active tonics, as cinchona, with doses of Plummer's pill; or colchicum, combined with blue pill; or ten grains each of powdered guaiacum and calcined magnesia, once or twice a day.

2. *As a consequence of diseased Prostate.*—Pass a catheter occasionally, *i.e.*, with intervals of two or three days or longer. If there be some little purulent discharge, apply a little nitrate of silver to the prostatic portion of the canal.

3. *When accompanied by more or less mucus in the urine, or muco-purulent deposit.*—Apply stimulating injections to the bladder. Nitrate of silver from half a grain to two grains to the ounce, increased if need be, to ten and even fifteen grains to the ounce. Give half a grain to a grain of acetate of lead with 2 grains of extract of opium. Give nitric acid, one or two minims to the ounce of water, when the urine is loaded with earthy phosphates. Creasote and copaiba are also recommended in some cases. The injection of simple warm water is often useful, and when the urine is very offensive, a solution of chloride of soda, from six to ten grains to the ounce of water, used once a day, is recommended. The vulcanized india-rubber bottle, fitted with pipes and valves, is the best instrument. In non-inflammatory cases, give infusions of diosma, or buchu, or uva ursi, combined with hyosciamus or camphor, and even copaiba or chios turpentine. Pareira brava is also strongly recommended, but often disappoints us. (Mr. H. Thompson, p. 101).

Diabetes.—It is very probable that this depends on cerebral disease, and not on either the stomach or kidneys. Therefore, look out attentively for morbid cerebral symptoms. This is a new idea, and facts are not yet sufficiently numerous to confirm its truth. (Dr. R. H. Goolden, p. 81).

Prevent the *arrest of the conversion of starch at the stage of sugar* when undergoing the process of digestion. Give a tablespoonful of German yeast two or three times daily in milk. (Dr. W. B. Herapath, p. 190).

Kidney, *Irritation and Inflammation of, from a Calculus.*—Prevent the increase of the concretion by correcting the unhealthy state of the urine according as acid, alkali, or oxalate of lime, predominate. Avoid severe exercise. Allay pain by the hottest hip-bath, at a temperature of 110° or 112° Fahr.; by chloroform internally and externally; by opium and the injection of warm water into the rectum. Guard against inflammation, by general or local bleeding; by aperients and sudorifics. (Dr. Bence Jones, p. 104).

Lithotrity.—In the choice of subjects for this operation, take care, if possible, 1st, to let the age be between 30 and 60, with neither the irritability of youth, nor the debility of old age. 2nd. The urethra should be large enough to admit instruments of considerable size. 3rd. The bladder should be healthy, and capable of holding six or eight ounces of fluid. 4th. The kidneys should also be healthy.

5th. The calculus should be loose in the cavity of the bladder. 6th. The diameter of the stone ought not to exceed $1\frac{1}{4}$ inch, as near as can be calculated. Where the above kind of case occurs, lithotrity and not lithotomy ought to be performed. (Dr. S. Fenwick, p. 220).

Simple enlargement of the prostate need not prevent the operation, but where there is inflammation or suppuration it is inapplicable, and lithotomy should be performed. Lithotrity should never be adopted, unless the bladder be free from inflammation, and one great means of knowing this is to ascertain the quantity of water which the bladder can hold. A bladder violently inflamed, is like a stomach inflamed, neither can contain much without parting with it. If the bladder can hold eight or ten ounces (other circumstances being favourable), lithotrity will generally succeed; but if it will contain only three or four ounces, this operation is not proper. As soon as the surgeon has filled the bladder, he should suddenly change the position of the patient backwards, so as to throw the stone into the back of the bladder. The manipulations can be carried on better in this place than nearer the prostate and the anterior part of the bladder, which is always more irritable and sensitive than the back part. (Dr. S. Fenwick, p. 224).

Retention of Urine.—Alkaline urine in this case irritates the mucous membrane of the bladder: whenever urine remains too long in the bladder it is disposed to become alkaline or ammoniacal. Therefore, in retention of urine always empty the bladder once or twice a day. The object of this is not only to relieve the patient of suffering but to prevent the urine becoming alkaline, and consequently irritating to the mucous membrane. If, then, the morning or mid-day urine be alkaline, use the catheter night and morning. If the cause of the retention and suppression cannot be reached by medicines, then we must relieve the congestion of the kidney, by acting strongly on the bowels by hydragogue medicines, and on the skin by sudorifics, to relieve the poisoned system, and then to have time to use other remedies. (Dr. Bence Jones, p. 98).

Stricture of the Urethra.—Pass a catheter, if possible, through the stricture. This catheter or sound is grooved, and in this groove is a cutting blade, which can be gently opened as the instrument is *withdrawn*, so that the stricture is effectually divided. (M. Maisonneuve, p, 316).

Test for Sugar.—If a freely alkaline solution of chromate of potash be mixed with urine suspected to contain sugar, and boiled, the liquor will assume a deep sap-green colour, arising from the decomposition of the chromic acid, the reduced oxide of chromium being held in suspension by the potass. Such is the sensitiveness of this test, that 5 or 6 drops of saccharine urine diffused through water,

is easily detected. Therefore, always have ready a mixture in equal parts of a solution of the neutral chromate of potass, and liquor potassæ. This should be labelled "*Test for Sugar.*" A piece of white paper at the back of the test tube will allow the colour to be better seen. (Mr. J. Horsley, p. 92).

Vesico-vaginal Fistula.—Dr. Wagner of Dantzig, operates for this defect in a new way. For a minute detail of his proceedings see page 231 of this volume.

VENEREAL AFFECTIONS.

Bubo.—It is seldom necessary to open a bubo. Employ counter-irritation. Take a solution of nitrate of silver (one drachm to two drachms of water), with the addition of three drops of strong nitric acid. This is to be painted freely into the skin over the inflamed gland. It causes great pain and soreness, which is followed by rapid diminution of the gland. This treatment may be extended to other cases in which inflammatory deposits, whether purulent or fibrinous, require to be absorbed or diminished. (Mr. J. Hilton, p. 244).

Syphilis.—Treat the *infecting* chancre, the true firm *indurated* sore, with mercury. The *unindurated* sore may be safely treated *without* mercury. In treating the former, in Paris, the proto-iodide of mercury is used, but this does not answer so well in this country as mercurial frictions, blue pill, or the grey powder.

The *Phagedænic Chancre* is treated by Ricord; by first destroying the whole of the unhealthy surface with the red-hot iron, previously placing the patient under the influence of chloroform. After the sloughs have separated, the surface is covered with strips of ammoniacum and mercurial plaster, and doses of tartrate of iron are given with great success, in the less obstinate cases. The most frequent variety of sore in London is the phagedænic, with induration. In this, the actual cautery does no good ; mercury must here be given, and the system supported by bark, wine, or steel. (Mr. W. Acton, p. 235).

AFFECTIONS OF THE SKIN, &c.

Erysipelas.—Early in the case, when the pulse is hard and full, and when there is no intestinal irritation, give an emetic of tartarized antimony and ipecacuanha, followed by minute doses of the antimony, till the pulse softens. Then give wine and good nutriment.

especially if the tongue be brown; give from four to six ounces of wine daily with sago, beef-tea, &c., but avoid giving the wine or brandy so long as the fever is high. The above quantity ought sometimes to be doubled. As a topical remedy, mercurial ointment is as good as any, and perhaps better, but use it cautiously, or the patient will be suddenly salivated. (Dr. J. S. Hughes, p. 238).

Favus.—Apply the following ointment:—℞. Sulph. sublim., ℔ss.; hydrarg. ammonio-chlorid. ʒss.; hydrarg. sulphureti cum sulph. ʒss. Leviga simul, dein adde olivæ olei, ʒiv.; adipis recentis, ʒxvi.; creosoti ℥xx.; misce. Sometimes four or five nightly applications will perfectly clean the scalp, but it requires to be used continually, a little every night to keep off the disease. The same ointment may be used for scabies and porrigo. (Mr. J. Startin, p. 242).

Porrigo.—Use the ung. sulph. comp. of the Pharmacopœia of the Hospital for Skin Diseases. See "*Favus*." (Mr. J. Startin, p. 243).

Scabies.—Use the ung. sulph. comp. of the Pharmacopœia of the Hospital for Skin Diseases. See "*Favus*." (Mr. J. Startin, p. 243).

Small-Pox, *to prevent Pitting in*.—Make a saturated solution of iodine in spirits of wine. Brush this tincture freely over the face once or twice daily, from the earliest period of the eruption, and continue it during the maturation of the pustules. (Dr. Crawford, p. 240).

Take of carbonate of zinc three parts, oxide of zinc one part, rub these in a mortar with olive oil to a proper consistence. Apply this all over the face, and renew it from time to time, so as to take the place of the natural scab. (Dr. Bennett, *Dublin Hosp. Gaz., May* 1, 1854, p. 107).

Ulcers, *Cancerous*.—For the prevention of smell, use the following powder made into a paste with water, brushing the parts over once a week or fortnight: Hydrarg. chloridi, ʒijss; hydrarg. bisulphureti ℈ij; acidi arseniosi ʒj.; misce. (Mr. J. Startin, p. 291).

Of the Leg.—Instead of applying common adhesive plaster and bandage after Mr. Baynton's method, use strips of linen or calico, well soaked in water, just as you use the sticking plaster. Over these wet strips of linen apply the common bandage. (Mr. C. Holthouse, p. 241).

AFFECTIONS OF THE BONES AND JOINTS.

Ankle-Joint.—In operations at the ankle-joint, arrange your incisions so that you can gain access to the tarsal bones, and, if the disease be more extensive than anticipated, that you can even remove

the entire foot at the joint, if you wish. Make "a transverse incision across the sole of the foot, commencing about three-quarters of an inch in front of one malleolus, and ending at a similar point in front of the other malleolus: a second incision is then made in the median line, beginning over the tendo-Achillis, on a level with the ankle-joint, and joining the former at right angles in the sole of the foot. The two lateral flaps thus marked out being next dissected upwards close to the bones, the calcaneum and astragalus are freely exposed. By division of their ligamentous and tendinous connexions, one or both of these bones may be easily removed;" and other parts may be easily reached by extending the median incision a little forward. If from the great extent of disease it is found necessary to remove the entire foot, it may be done by uniting the two extremities of the transverse incision by a curved incision across the dorsum of the foot. (Mr. T. P. Teale, p. 151.)

Fracture, *Compound.*—When ought amputation to be resorted to where gangrene supervenes? Military surgeons, as Larrey and Guthrie, say you may amputate when the gangrene is spreading. Most surgeons say, delay till the gangrene has ceased to spread, and the line of demarcation has been fairly established. Perhaps the best practice is a middle course, viz., if within a certain period no disposition to an arrest of the gangrene appear, we ought to operate while the patient is strong enough to bear it. Should, however, the gangrene spread quickly, accompanied by great prostration of strength, delirium, and rapid pulse, the operation is inadmissible. (Dr. S. G. Wilmot, p. 166.)

Ununited.—When fractured bones will not unite, the seton, as first used by Dr. Mott, will cause such a degree of inflammation at the ends of the bones as to cause their union when not too far asunder; but when too moveable, or too far asunder, or when from other causes they will not unite, use the *wire-ligature.* Bore canals in the cylindrical parts of the bone, about three-eighths of an inch long, then pass a copper wire (No. 16) through these canals, and twist it tightly till the ends of the bone come firmly in contact. This practice has generally been applied only in old ununited fractures, but it is a question whether or not it may also be used in more recent cases, *when the bones are very moveable.* In military surgery it may be useful. Any kind of wire will do. (Mr. J. Russell, p. 161.)

Of the Patella.—Use a knee-cap of gutta-percha moulded to the front aspect and sides of the joint, and with a hole cut in the centre, large enough to admit the patella. The two halves of the bone are then to be brought together, and the splint, lightly padded, placed over them and secured by a bandage. (Mr. Le Gros Clark, p. 170.)

Joints, *Diseased.*—M. Tessier, of Lyons, has shown that prolonged rest alone, even where little or no disease previously existed—a rest for five or six months—is sufficient to cause absorption or ulceration of the cartilages of joints. This prolonged rest also aggravates existing disease. (Mr. Coulson, p. 115.)

In the early stage of inflammation of joints, apply plenty of leeches, except in scrofulous subjects. To relieve pain, use the following:—moisten a bit of lint with 20 or 40 drops of chlorinated hydrochloric ether, and apply it to the joint—it acts beautifully. After bleeding, bring the patient rapidly under the influence of calomel, or give tartar emetic. The limb should have absolute rest in the most favourable position, for 5 or 6 weaks, but not longer, for fear of stiffness, &c. The joint may be splinted with leather in the following way:—Get some thick leather, soften it in warm water, and mould it, when pliable, to the joint, and when hard remove it, and line it with wash leather. This forms an admirable splint. One may be made for each side of the joint. Evacuate any pus that may be formed, in good time. Promote the absorption of such materials as the inflammation may have deposited, by counter-irritation, by means of blisters, croton oil, discutient plasters, composed of equal parts of galbanum and mercurial plaster, pressure, friction, the cold douche, "Scott's dressing." (Mr. W. Coulson, p. 119.)

Ulceration of Articular Cartilages of.—Acute inflammation is marked by rapid effusion within the joint, and uniform swelling; in disease of cartilage, the swelling is slower, and outside the joint, not coming on till some time after the first sensations of uneasiness. In chronic degeneration of synovial membrane, the swelling, although indolent, is more rapid than when the cartilage is diseased. The swelling is sloughy, elastic, and superficial. Scrofulous disease of the heads of the bones is most likely to be confounded with disease of cartilage; but ulceration of cartilage chiefly belongs to the middle and after periods of life, and to dyspeptics. In scrofulous disease, the pain generally comes on *after* the formation of pus. In ulceration of cartilage, the pain comes on earlier, and may continue a long time without pus forming at all. Perfect repose, accomplished by *splinting* the joint, either by Mr. Scott's method or by leather or gutta percha splints *moulded* to the joint. Give mercury early, when not contra-indicated, colchicum, with alkaline aperients. By and by apply counter-irritation. (Mr. W. Coulson, p. 125).

Scrofulous Disease of.—In the early stage of the disease, Sir B. Brodie says, "all kinds of counter-irritation, such as blisters, issues, setons, and tartarized antimonial ointment, are not only not useful, but actually mischievous." The only exception is in cases of hip-

joint disease of a painful character. These counter-irritants certainly excite absorption of fluid which may exist in the joint, but do not act on the diseased structure. Perfect repose of the parts in the horizontal position, with leather or gutta percha, or other kinds of splints lightly applied, is, no doubt, the best local treatment; at the same time, allowing the patient as much out-door amusement as possible. (Mr. W. Coulson, p. 130).

To promote absorption in these cases use the following ointment: veratrine, grains 5 to 10, dissolved in spirits of wine, and added to one ounce of axunge. This is not to be used in acute affections but in chronic. Rub about the size of a small bean upon the joint for a quarter of an hour daily. If violent itching be produced use a little glycerine and water. (Dr Klingner, p. 161).

Knee-Joint, *Amputation at the.*—First make a small anterior flap, drawing the knife across the front of the joint, and then inserting the point of the blade behind the femur, thrust it through to the other side, close to the condyles; then carrying it downwards cut the posterior flap from the calf of the leg. The saw is then applied a little above the condyles, and the flaps brought together as in an ordinary amputation. Mr. Potter, of Newcastle, saws through the bone before making the posterior flap. Take the full length of the calf for the posterior flap, as the soft parts at the back of the thigh contract very much in the course of time. (Mr. W. Fergusson, p. 141).

Thigh, *Amputation of.*—The longer the stump the better, and, if circumstances warrant, operate at the knee-joint. Progression is greatly improved by the long stump thus left, the limb does not describe the semicircular curve which it does with a short stump. The walk is altogether better. (Mr. G. M. Jones, p. 145).

AFFECTIONS OF THE EYE.

Cornea, *Vascular Opacity of.*—When caused by granular conjunctiva, apply various stimulants or astringents, as nitrate of silver, sulphate of copper, acetate of lead, alum, or zinc, so as to cure the granular condition of the conjunctiva, which causes the opacity. If the granulations be small, round, vascular, and sensitive, use a *mild* stimulant, as ten grains to the ounce, of nitrate of silver or sulphate of copper; if large, pale, and insensible, the solid nitrate may be applied freely and frequently. The sulphate of copper is perhaps preferable to nitrate of silver. It may be rubbed freely over the surface daily, or every other day. Weak solutions of nitrate of silver only irritate. (Mr. G. Critchett, p. 251).

Opithalmoscope, *Improved.*—This instrument enables us to throw a large quantity of light into the eye in such a way that the observer, without intercepting the rays which enter, may receive directly into his own eye those reflected from the retina of the explored organ. The instrument is a small round concave mirror, about two inches in diameter, with a focal distance of four and a half inches; the silvered surface being accurately adapted to a plate of blackened copper. The centre is perforated by a small hole for the observer to look through. It is obvious that the observer, by having a light at the back of his patient, can reflect it from his mirror into the eye, and by means of his little peep-hole he can distinctly observe the interior of the organ, the pupil being previously dilated by belladonna. This little instrument may be held in one hand, but Mr. Dixon adapts it to a spectacle frame, so as to have both hands at liberty. (Dr. E. Williams, p. 245).

Opithalmia, *Purulent.*—If there be extensive chemosis and swelling of the lids, divide the vessels of the conjunctiva with a small knife, so as to bleed them as recommended by Mr. Tyrrell. Keep a bit of lint dipped in cold water constantly applied to the lids. Apply a solution of nitrate of silver (five or ten grains to the ounce) between the lids *every hour, or two hours,* as the patient can bear it; but previous to each application of the drops, wash out all discharge of pus by means of a syringe and warm water. (Mr. G. Critchett, p. 434).

Strumous.—In the intolerance of light which generally accompanies this disease, use the following:—Coniin, gr. $\frac{1}{2}$; olei amygdal. dulc. ℥j. Mix to form a thick fluid with which the lids may be daily pencilled. (M. Mauthner, p. 253).

Tinea Tarsi.—First carefully remove all the scales and crusts from the eyelid, then rub the solid nitrate of silver along the edge of the lid; repeat this twice a week. (Royal Ophthalmic Hospital, Moorfields, p. 254).

Smear the edge of the lid every night with mild mercurial ointment, (ammonio-chloride, ten grains to the ounce), and give an arsenical tonic in combination with iodine or mercury. (Mr. J. Startin, p. 254).

MIDWIFERY AND DISEASES OF WOMEN.

Abortion, *caused by a Syphilitic Taint.*—Secondary syphilis is not curable in the pregnant female. Both parents must be affected with mercury for six or eight weeks; and this must be done in the female when not pregnant. (Dr. R. Johns, p. 278).

Cervix Uteri.—For the exploration of the cervix uteri and using various applications, an ingenious speculum is used by M. Jobert; a very small instrument with a long handle,—sufficiently small to be passed up the common vaginal speculum. See p. 282, for a description. (M. Jobert).

Polypus Uteri, *Detection of.*—The polypus will be best detected during the relaxation and forcing down, attendant on an attack of flooding. The bi-valved speculum assists by expanding and opening the os. Dr. Locock particularly points out that the tumour is always best found out *during hemorrhage*, and indeed it cannot be detected at all when very small, and only in the cervix, in the intervals of the attacks of hemorrhage.

For bringing a polypus into view, the ergot of rye may sometimes succeed, but *galvanism* is more safe and more efficacious. The os and cervix uteri may be dilated by means of sponge-tents,—use two or three graduated sponge-tents in succession so as to open the canal for inspection. M. Jobert de Lamballe has recently contrived an *intra-uterine* speculum. See "Cervix Uteri."

In those cases which indicate the necessity of exploration beyond the uterus, first bring the polypus into view, if you can, by dilating the os uteri by sponge-tents, and giving repeated doses of ergot of rye, assisted by the application of galvanism. If you cannot get hold of the tumour so as to encircle the neck, pull it lower down by the aid of a tenaculum, if this operation be not particularly resisted—and now try again to ligature the neck of the tumour. (Dr. R. Barnes, pp. 296, 299).

Prurigo Ani et Vaginæ.—Take equal parts of sulphate of zinc and of alum, roughly powder them, and put them into a glazed earthenware vessel; put it on a slow fire and leave it there till bubbles of air are no longer disengaged, and till the mixture acquires a stony hardness; then powder it and throw it by small portions at a time into boiling water. Filter, and apply to the parts with a sponge and on linen. (Dr. Richart, p. 319).

Puerperal Convulsions.—In fulness of the vascular system, blood-letting is the most powerful sedative of spinal action. Hence, when the convulsions depend on the stimulation of the spinal marrow, by excess of blood, or on mechanical pressure exerted by the blood on that organ, or on the medulla-oblongata, we must bleed. Remove, also, if possible, the *eccentric* cause of irritation, whether it exist in the womb, the rectum, or the stomach. The blood-letting must be regulated, not by the violence of the disease, but by the state of the circulation *in the interval of the fits.* Evacuate the liquor amnii, which, by relieving the distension, diminishes the size of the womb,

and the quantity of blood circulating in it, and also makes the organ less irritating to the general system. Evacuating the liquor amnii is to the womb what an emetic or an enema may be to the stomach or bowels. Do not trust to chloroform, as "when the functions of the true cerebral or sentient portion of the nervous system are diminished or abolished, as is the case in anæsthesia, the irritability of the excito-motory, or true spinal system of nerves, is increased." (Dr. Tyler Smith, and Mr. A. B. Steele, p. 271).

Sore Nipples.—Apply a bit of lint dipped in the tincture of benzoin; remove this, and re-apply from time to time so as to form a coating, which suckling does not remove. (M. Bourdel, p. 319).

Uterine Hemorrhage.—Give from five to ten grains of capsicum every ten minutes, until the hemorrhage ceases. (Dr. Brock, p. 286).

Womb, *Cancer of*.—For the prevention of fetor use arsenical injections of the strength of from two to eight grains of white arsenic in a pint of water. Charcoal and other disinfectants destroy fetor, arsenic *prevents* it. (Mr. Lloyd, p. 291).

Prolapsus of.—Diminish the size of the vaginal canal by producing in succession numerous little cicatrices, by small forceps, which are introduced into the vagina, and *pinch* up certain portions. They are allowed to remain in the canal till detached. (Dr. Desgranges, p. 279).

MISCELLANEA.

Charcoal.—This is an admirable *deodorizer*. Take two sheets of cotton wool and between them put a tolerably thick layer of powdered charcoal, and *quilt* the whole together in small segments the same as in making a cushion. This charcoal quilt is to be placed over any nasty smelling sore, and will prove a good disinfectant. (Mr. Wormald, p. 242).

Chloroform, *Artificial Respiration after the use of*.—In cases of poisoning by chloroform, before having recourse to artificial respiration, *draw forwards the tongue*. As soon as breathing ceases in these cases the tongue falls back and closes the orifice of the glottis. Pull the tongue well out of the mouth and pass a hook through the tip so as to command it while artificial respiration is carried on. (Mr. R. E. Bickersteth, p. 430).

Cod-liver Oil, *Test for*.—Drop a little sulphuric acid, *guttatim*, into the oil. It causes a centrifugal movement, and a beautiful violet colour, which changes to purple on agitation, and ultimately to a

rich sienna brown. This is best seen by adding one or two drops of the acid to half a teaspoonful of the oil spread out on a white porcelain plate. Sulphuric acid when added to olive oil causes a dirty grey colour—to poppy-oil a deep yellow colour—to ordinary fish-oil a deep brown colour. (M. De Jongh, p. 331).

New mode of giving.—Take the yolk of one egg; sugar, two ounces; orange-flower water, one ounce; cod-liver oil, three ounces; essence of bitter, almonds, one drop. Either the sixth or eighth part will be a dose, according to the quantity of oil which is intended for the patient.—*Ann. Clin. de Montpellier.* (*Lancet*, Aug. 5, 1854, p. 104).

Electricity.—The most *handy* kind of machine is that of Mr. Hearder. It may be placed in a box seven inches long, seven and a half inches deep, and eight inches wide. When using it neither the coil nor the battery need be removed from the box. (p. 290).

Intense Cold, *Uses of.*—First make a freezing mixture as follows: Pound a piece of ice as big as an orange, and put the material on a sheet of paper, mix this thoroughly, with a paper folder, with half its weight of common salt. Put this mixture into a net of the size required, and as soon as it begins to melt it is ready for use. The net is now to be placed upon the part required, and frequently to be raised in order that fresh particles of the mixture may be brought into contact with the skin. The skin is benumbed by this application in a few seconds, it first becomes white, showing that the skin is influenced; if prolonged, the adipose matter under the skin begins to freeze, and the part becomes hard as well as white. The freezing may be extended even to deeper parts if necessary.

Remedial uses.—In acute lumbago, chronic rheumatism, sciatica, acute rheumatism, except where the head is implicated, ophthalmia, glandular inflammation in the neck and groin, orchitis, erysipelas, painful nodes, neuralgic headache, cancer, &c. (Dr. J. Arnott, pp. 348, 350).

Iodide of Potassium.—It is said that this medicine is more valuable when combined with ammonia, gently stimulating the stomach, diffusing the blood, and with it the medicine through the system, and, by chemical decomposition, liberating the free iodine, and thus sending it on its salutary message. (Dr. Gull, p. 429).

Opium, *Poisoning by.*—Always have ready the following preparation of belladonna: Take four ounces of the leaves of belladonna, and two pints of rectified spirit, and percolate. Of this give six drachms in doses of about one drachm every half hour. In another case, ten drachms of the above tincture of belladonna were given in the course of one hour with success. (Dr. T. Anderson, p. 430).

Splints.—See page 171 for an account of felt splints, which may be very useful in some cases. (Prof. F. H. Hamilton.)

Wine, *Medicinal use of.*—As a *diuretic*, Moselle may be as useful as gin or whiskey. It contains an excess of salts, and may prove as energetic as, and less heating than, the essential oil in gin or whiskey.

In *diabetes*, use the claret wines, which are free from sugar, and contain much tannic acid.

In *dyspepsia and gout*, use the wine most free from ultimate acidity and least stimulating. The best is the *least acid claret* wine; next, strong or perfectly dry champagne. Good mansanilla will answer the purpose, and is much cheaper than amontillado sherry. But, after all, weak brandy and water, or some pure spirit and water, is most free from acid and sugar, and answers best in dyspepsia. (Dr Bence Jones, p. 425).

PRACTICAL MEDICINE.

&c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

Art. 1.—ON FEVER.

By Dr. Wm. Stokes, Regius Professor of Physic in the University of Dublin.

[In our last volume will be found some very valuable remarks on this subject by this eminent physician. In those remarks we could not perceive much that was different from the opinions of other eminent practitioners both in London and elsewhere; but on one subject Dr. Stokes, and also the late Dr. Graves, seem to differ materially from English physicians, viz., on the influence which malarious poison has in generating fever. Dr. Stokes very plausibly alledges, that if filth and all its concomitants are such fertile causes of fever, it ought to be constantly, and not periodically, present in most districts of Ireland, as all are alike afflicted with these physical causes; whereas fever is only present periodically, and will appear at the same time in Dublin, Cork, Galway, Limerick and Belfast. This shows that some mysterious atmospheric cause is at work: but that filth, in the form of sewers, stagnant pools, privies, &c., &c., are not the originating cause. The mysterious atmospheric cause no doubt finds a good assistant in malarious poisons, and it becomes very questionable whether the atmospheric cause *alone* would generate fever. Dr. Stokes says]

With respect to those causes which may be held to be capable of exciting fever, irrespective of contagion, I have only to say that as yet we know but little about them; and we have the highest authority for believing that the origin of epidemics is one of the most obscure and difficult subjects in the whole range of physical inquiry. But I cannot help expressing my belief that too much stress has been laid upon the effects of miasmata resulting from imperfect drainage or the want of ventilation and of public cleanliness in general. No one will for a moment suppose that I wish to teach that these influences do not act in deteriorating the physical health and moral condition of a people, and in thus increasing the mortality of any existing epidemic, and that their removal is not an imperative duty of every government and community; but the question before us is, are these influences in this country the sole or the chief causes of typhus fever? I do not

believe that they are, because in Ireland, not only in the isolated dwellings of the poor which are scattered over the face of the country, but in the towns also, all those causes which result from the imperfect drainage of dwellings, from the accumulation of decomposing organic matters in their vicinity, and from imperfect ventilation, are, I regret to say, but too constant and too general; and yet the production of fever, whether sporadically or epidemically, is inconstant and irregular in the highest degree. Why should these causes produce fever at one time and not at another? Why should districts remain for years free, or comparatively free, from fever, while the supposed exciting causes remain in full force? or, again, why, if the cause be constant, should the epidemic character of the fever vary? We may say, excluding the consideration of isolated cases, that each epidemic has a special or predominant character; thus, the great epidemic of 1827 and 1828, was very different from the epidemic which preceded it in 1818, and those which followed it in 1836 and in 1847. It was in the epidemic of 1827-8 that we observed the almost universal prevalence of the secondary disease of the intestine; perforations of the intestinal tube were common; and yet, since that period, such an accident is rarely met with, either in the fever itself, or during the period of convalescence. It was at that time, too, that those singular and fatal cases of yellow fever to which we have before alluded occurred intercurrently. In this fever, too, termination by well-marked crisis was commonly observed, a circumstance which is comparatively rare in the epidemics of maculated typhus in this country.

I do not put forward these views as in any way original, for Dr. Graves long held the opinion, and taught it in this theatre, that something more than the effect of local causes, as the term is commonly understood, was necessary to explain the occurrence of epidemics in Ireland. Let me read you a quotation from his seventh lecture, one of those devoted to the consideration of fever:—"That fever, in Ireland at least, depends on some general atmospheric change which affects the whole island simultaneously, independent of situation, aspect, height above the level of the sea, dryness or moisture of the soil, or any other circumstance connected with mere locality, is proved by the fact, that, when typhus begins to increase notably in the Dublin hospitals, we may always rest assured that a nearly simultaneous increase of fever will be observed at Cork, Galway, Limerick, and Belfast. For a considerable period there was a great tendency among the physicians to refer the origin of typhus, and almost every variety of fever, to malaria, or unwholesome emanations from the soil, produced by the decomposition of vegetable matter. In Ireland, facts do not bear out this hypothesis, for, as already stated, when an epidemic of fever has become established, it breaks out simultaneously in situations the most different, and in some where no such emanations can be supposed to exist; thus I have seen a whole family affected in the telegraph, situated at the summit of Killiney, a mountain formed of hard

granite; and, indeed, the granite districts beyond Rathfarnham, Tallaght, and Killikee, supply the Meath hospital with its worst cases of typhus." Further on he observes:—"Although ready to allow the general improvement of the health of the public from improved drainage, improved habits of cleanliness, and increased comforts, yet I cannot admit that in Ireland we are to expect any notable diminution of fever from the operation of these causes. In making this statement, you are aware that I am opposing the usually prevalent opinion. The grounds for my dissent have been partly explained to you already, for, according to my observation, the increase or diminution of fever in Ireland arises from some unknown general atmospheric or, if you will, climatic influence, quite independent of locality, and consequently, the most improved and thoroughly drained towns and country districts are quite as liable to epidemics of typhus as are the most neglected and marshy parts of our island. The causes which occasion these epidemics are, on the other hand, in no way connected with the notable variations of the seasons, for, with us, the ravages of typhus are observed sometimes in dry, sometimes in rainy seasons, and its epidemics appear quite uninfluenced by the cold of winter, or the heat of summer."

What I wish you to believe, is, as I have already stated, that our fever is both epidemic, as proceeding from general but unknown causes, and also contagious; and no one can deny that causes, which would act in depressing the health and moral energy of a people, by rendering them less able to resist the effects of disease, would increase the general mortality. The influence of bad ventilation and overcrowding I need not here dwell on; nor, on the other hand, need I occupy your time with more arguments to establish the truth of the doctrine of contagion. You will find in the writings of Dr. Christison and Dr. Graves, convincing evidences on these points; and let me again refer to the great argument drawn from the liability to contract fever which has so long been observed among the medical practitioners of Ireland.

My opinion, as I have already stated to you, is, that in Ireland, local influences have not that great importance either as generators or promoters of fever which some believe them to have, and, consequently, the deductions to be made in favour of these causes would not greatly weaken the general results. We must believe, that the causes of fever, independent of mere contagion, are various in the extreme, that they are probably numerous and complicated, acting in combination rather than singly, and varying in their effects, not only in consequence of their own properties and combinations, but also as regards the condition of the individual in whom fever is developed. To this point I have already alluded in a former lecture, in speaking of the influence of the same contagion on individuals of different countries. And Dr. Paget, in observing that our pathology of fever is not so perfect as to assure us that there are no predisposing causes

besides those which are commonly allowed, notices the comparative immunity of infants and persons above forty years of age from the typhoid fever with rose spots, and affections of Peyer's glands, &c., indicating that the constitution of the individual is an element in the question.

Let us now return to the consideration of the local diseases of fever. We have already seen that the existence of local symptoms in fever does not necessarily imply the existence of any known anatomical change. A man may have pain and delirium without cerebritis, cough and dyspnœa without pneumonia, vomiting, purging, and meteorism without enteritis. To learn this point is to advance a great way in our knowledge of fever and its treatment. On the other hand, observation during life, and *post-mortem* inspection, prove that local diseases involving alterations of structures, such as thickening, softening, vascularity, effusions, ulcerations, and gangrene, may be produced in various organs during the course of a fever.

Now, the great point in practice relating to these changes is, that they are symptomatic of the fever, secondary to the fever, and, in all probability, under the same law of periodic action as the general malady itself. They do not appear to begin with the fever, but they arise after it has existed for a certain time. There is the greatest variety in the period of their occurrence, and in their combinations; they may, as I have just now said, spontaneously subside with the fever; they may interfere with its critical termination; and, in certain cases where this does not occur, and when the general character of typhus disappears, progressive disorganization may go on in the structures which have been already affected.

In what way are we to consider the nature of these secondary affections in typhus fever? It appears now pretty well established that, in the follicular intestinal disease of the continental fevers, there is a special typhus deposit, which, at least, in the cases of recovery, is under the law, first of a progressive, and then of a retrogressive influence; just as in variola we observe the progressive maturation and absorption of the pustule. Recent pathologists have applied this principle to many other of the local diseases in typhus; and although the existence of a special deposit is not yet so well or so fully established in the case of thoracic and cerebral diseases, or at least in the case of parenchymatous as compared with membranous structures, still we may, with a good deal of safety, believe that an action more or less analogous to that which occurs in the glands of Peyer and Brunner, though perhaps not so perfectly developed, may be assumed to occur in all the secondary diseases of typhus which are not purely neurotic.

In speaking of a specific deposit in the secondary diseases of typhus, I do not wish it to be understood as intending to convey to you the impression that this deposit presents any definite characters whereby it can be distinguished from other morbid products; for, even with

the aid of the microscope, we cannot discover any special distinctive characters in the deposit found in the follicular disease of the intestine, or in other forms of the secondary affections of typhus. It was at one time believed that the so-called "massa typhosa" did present special, distinctive, histological elements; but more recent research has shown that these views are erroneous. Still it is possible that, although we cannot determine the existence in it of any physical specific character, it yet possesses a vital specific character. Let us illustrate this by referring to two specimens of pus,—one taken from the pustule of variola, the other from an ordinary abscess; histologically they will appear similar, but that they have separate vital characters no one can entertain a doubt. But other conditions are found associated with this typhus deposit, or occurring when we cannot demonstrate its existence. Under this head we class many of those appeaeances which are described as inflammatory, such as redness, softening, tumefaction, &c. Some have supposed that these states indicate a reactive inflammation, and that such does often occur, especially in the intestine, is abundantly proved by the researches of Rokitansky and others. I think it, however, extremely probable, that, in certain structures or organs, as, for example, the lung, these appearances of inflammation may precede or accompany the typhus deposit, or that they may occur even without such a deposit at all; and I think it likely that the liability to actual typhus deposit is much less in the lung than in the intestinal glands, and greatly less in the brain and nervous system generally than in either the thoracic or the digestive systems. Were it otherwise, typhus and typhoid fever would be much more fatal diseases than they are, death being produced in the one case by coma, and in the other by asphyxia.

But, even though he may not find, upon a close dissection, anything beyond the recognised appearances of inflammatory action spread over the surface of the mucous membrane, we are to believe that this condition, just like the typhus deposit, is secondary to the fever, and partakes of its specific character. You are not to believe that it is a simple idiopathic inflammation, nor is its existence to lead you into the deplorable errors of the antiphlogistic school, that Sangradoism of the nineteenth century which numbers more victims than the sword. This condition, however, although specific and secondary, still has some characters of irritation, or inflammation if you will; and this fact points to the adoption, in certain cases, of a practice which, to the mere theorist, appears inconsistent, namely, the use of local depletion to relieve the suffering organ, while, at the same time, we employ a general tonic and stimulating medication.

Let me, in conclusion, indicate to you in a general way the *principal pathological conditions* with which, in the treatment of a case of typhus fever, the practical physician has to deal.

1. We have the neurotic conditions, that is to say, conditions of functional derangement occurring without any known anatomical

change. They may occur in relation to any of the organs; but they are, perhaps, more important, and certainly more frequent in the case of the nervous, than in those of the respiratory or digestive systems.

2. We meet with intercurrent and secondary irritations or inflammations affecting principally the mucous membranes, less frequently the parenchymatous structures, and still less the serous surfaces. These irritations, although not associated, so far at least as we can discover, with any special deposit, are, nevertheless, of a specific character, and are under the influence of the laws which govern the general disease.

3. We have the condition now specified associated with, though probably for a short time preceding, the typhus deposit, just as we see in variola the vascularity of the skin to precede and accompany the vesicular eruption.

4. We may observe the typhus deposit occurring independently of any other alteration, and apparently not associated with any irritative process.

5. We observe the re-active inflammation supervening on the typhus deposit, which has been so well described by Rokitansky, and which may produce progressive ulcerations or even mortifications of the affected parts.

Lastly, there is a condition of softening of organs, upon the nature of which we have, as yet, no very definite ideas. In some instances, it seems to be produced by an interstitial deposit of typhoid matter; while in others it is difficult or impossible to prove the existence of such a deposit. This state of softening, as we shall presently see, is one of great practical importance. Its influence upon the heart, as you all know, is most remarkable. Its existence in that organ demands special attention, and there is good reason to believe that the same state, when affecting others of the involuntary muscles, such as those of the air tubes, and perhaps also those of the intestinal canal, has an important influence on the symptoms and progress of the disease.—*Med. Times and Gazette, June* 24, 1854, *p.* 639.

[In Dr. Stokes's lectures the reader will find an ample store of valuable practical remarks, but none more so than his directions to *feed* in fever. The following opinions about the actions of the heart, and their guide in the administration of stimulants, are most valuable. He says]

What we have established as to the state of the heart in connexion with the effect of stimulants, is simply this,—we have ascertained that the efficacy of stimulants is often directly as the debility of the heart. It has been also ascertained that the power of bearing stimulants, their effect upon the nervous system, their good effects on the general condition, are directly as the weakness of the heart We may lay down as a rule, that there are three conditions of the heart

to be looked at by the practical man in the treatment of fever. In one, we have an excited heart—a violently excited heart all through the case; and this heart may be excited and violent, although the symptoms be those of extreme adynamia, although the surface be cold, the breath cold, and the pulse so feeble that it cannot be discovered. Nay, the heart may act with great force for several days, and yet there be no pulse at the wrist. This is one case. In the next case, we find exactly an opposite condition, in which the systolic force of the heart is diminished. This is shown by loss of impulse of the heart, by diminution of the first sound, and, in certain cases, by extinction of the first sound of the heart while the second remains. This is a case which calls for wine, and in which you should give it: it is a case in which, in the vast majority of instances, wine will agree with the patient. This is a third set of cases in which the heart does not seem to be implicated at all in the course of the disease, in which, notwithstanding the existence of the most extraordinary group of symptoms affecting varions organs, the heart, in the middle of the storm, seems to be in a state of calm and quiet. If we compare these three sets of cases with a view to prognosis, we may arrange them in this way. The case of excited heart all through, with feeble pulse and with adynamia, is unquestionably the worst case. There is no worse symptom in fever than an excited heart. It is especially a bad symptom when, with that excitement, we find a feeble pulse. The next will be the case of sinking of the heart; and the most favourable case is that in which, as I said before, the heart seems to escape disease. But you are not to suppose, that because you have an excited heart you are not to give wine if the symptoms of the patient require it: and you are not to suppose that, because the heart is not affected at all, you are to withhold wine if the general symptoms of the patient require it. You are not to found your exhibition of wine or stimulants upon any one thing; you are to take the general state of the patient into consideration. What we have done is to discover an intelligible practical rule which will guide you in the use of wine in certain, I think in many cases; but you are not to suppose that because this man has a clear first sound at his heart, therefore you are not to give wine. You are not to suppose that because the heart is safe you can do without wine. Now, in the case of Hardcastle, recollect that although his heart seemed to escape, or was at most only feeble through the course of the disease, what frightful adynamia existed: how for day after day the patient's face was Hippocratic, or almost so; how the general character of the disease was that of the most terrible putrescent fever; yet his heart escaped. And here is the result. We have given that man upwards of twenty bottles of wine and twenty-four ounces of brandy, and now, on the twenty-eighth or thirtieth day of the disease, we have the satisfaction of feeling that his case may be set down as among the triumphs of medicine. I wish also strongly to impress on you the the great importance of the use of other forms of nourishment in this

disease; for we must not only keep up the nervous energy of the system by wine, but we must support nature by food. There is no mistake more fatal in fever than the withholding of food. I was early taught the importance of the use of careful nourishment in fever by my friend and colleague, Dr. Graves. I remember once, Dr. Graves, when speaking of the necessity of the use of nourishment in fever, made use of these words,—"If you are at a loss for an epitaph to be placed on my tomb, here is one for you,—'*He fed fevers.*'" In addition to the prejudices with which the inflammatory doctrine imbued so many minds, with respect to the use of food in fever, there was a new set of arguments raised against it, in consequence of the experiments of an American physician. I allude to the case observed by Dr. Beaumont, and so often quoted since. In this remarkable case, various medical substances and articles of food were introduced through an external fistula into the stomach, their effects being noted, as also the conditions of temperature, vascularity, &c. A set of results were subsequently published in connexion with the action of the stomach upon food. One of the results stated to have been thus obtained was, that the existence of the state of fever altogether suspended the process of digestion. Here was a statement which had the appearance of being the result of strict observation. It influenced a number of young men; but did it influence those who had once been in charge of a fever hospital? Not at all; because those men knew very well that, no matter what Beaumont might say about the stomach not digesting when the patient had fever, in thousands of cases patients in fever digested remarkably well, required food, and derived benefit from it. In a large number of cases of typhus fever, the stomach has an excellent power of digestion; and, I believe, if we were bold enough, we should find that many articles of food usually forbidden to fever patients might be given with safety. A curious incident was related to me which shows that the stomach in fever is capable of digesting even a rather coarse article of food. A lady who had been recently married was attacked with extremely severe petechial fever; she was covered with dark coloured maculæ, and the disease had run to about the twelfth or thirteenth day. She was attended by several eminent physicians. Her case was an extremely bad one, and her life was all but despaired of. She was violently delirious. Her husband had occasion to leave the house on some business. At the period of the dinner-hour of the family, the servants were cooking a rump of beef and cabbage, and the odour of it filled the house. In her delirium she called for some of the beef and cabbage; she was then, you must understand, in severe fever, and covered with maculæ. Her sister, who was attending her, believing she was dying, thought it only right to indulge her, from the feeling that it was right to indulge the request of a dying person. She proceeded to the kitchen, and, as soon as the beef was boiled, cut a very large mess of beef and cabbage; and this was brought up smoking hot to the lady's bedside when she

devoured it with great avidity. Shortly afterwards her husband came in, and was told what had happened. He became terrified, and sent for physicians in every direction. Four or five assembled; time was pressing, and every one agreed that something should be done. At length the late Dr. Harvey, a practical physician of the very first class arrived. He was laid hold of by the agonised husband, forced up stairs, and his opinion earnestly requested. At that time the stomach-pump was not in fashion, but every one agreed that something decisive should be done, that an emetic should be given, or some extraordinary effort made to get this mess of beef and cabbage out of the lady's stomach. When Dr. Harvey went to the bedside, he found the patient in a tranquil sleep. He turned round, and when anxiously appealed to what should be done, he said—"You had better wait till she wakens; let her sleep it out." She slept for four or five hours; awoke wonderfully better, and on the following day was out of danger. I do not give you this case to induce you to feed your patient with salt beef and cabbage in fever; but it is very important, as showing that in typhus fever, with maculæ, the stomach is capable not only of digesting such a coarse article of food as salt beef, but that even such food may have a good effect.—*Med. Times and Gazette, May* 20, 1854, *p.* 508.

[Dr. Stokes makes some valuable remarks in these lectures on fever respecting some of the *local* or *secondary* diseases occurring. He observes that these vary in different countries, as to their seat and probably as to their nature. In France, for example, these secondary diseases attack chiefly the intestines. In Ireland, and probably in England, the pulmonary organs are more liable to these local diseases than the intestines, except perhaps in the autumnal months, when the alimentary canal is certainly very liable to attacks. In hospital practice, we find that pulmonary are more frequent than cerebral or nervous symptoms; and, moreover, Dr. Stokes finds that in hospital patients attacked by pulmonary affections in fever, wine and stimulants are far more efficacious than in cerebral or nervous attacks among the wealthy.]

In the typhus fever of the upper classes in Ireland the nervous symptoms are generally much more aggravated and developed at an earlier period; and it may be that this preponderance of the nervous symptoms, this tendency to affections of the brain in one class, even though these affections be principally neurotic, is a cause of the comparative exemption of such cases from the secondary bronchial disease. You will find as you advance in the study of general pathology, plenty of examples in which diseases of structure or of deposition are suspended or replaced by purely nervous affections. Explain it as you will, the general proposition appears true, that the nervous symptoms, comparatively speaking, are but slightly developed in the fever of the ower classes, while those indicative of bronchial disease are much

more prominent; and conversely, that in the upper ranks symptoms indicative of irritation of the mucous surfaces are less developed, while the nervous symptoms are severe; and this, perhaps, may throw some light upon the doctrine which has been long held by many, that the mortality of fever is greater in proportion as we ascend in the scale of society.

I have already told you that, as regards prognosis, the preponderance of the nervous symptoms in fever should cause us more apprehension than that of any other class of symptoms, and especially when this preponderance is observed at an early period of the disease. This greater susceptibility of the nervous system in the higher classes may itself be a cause why we cannot use wine with as great liberality in this class as with ordinary hospital patients. And this, again, may explain the greater fatality in private practice, inasmuch as that, in consequence of the excitement of the nervous system and the incapability of the patients to bear stimulants largely, we are debarred from the use of that which is the great medicine for fever.

I think we may lay it down as a principle, that the more the secondary affections of fever are anatomical, the greater will be the utility of stimulants; and conversely the more they are neurotic, and especially in cases where these neurotic symptoms are more closely related to the cerebro-spinal centres, the less will be the efficacy of wine. It might be supposed, from *à priori* considerations, that the the man in the higher classes of life who has been accustomed to the use of wine, would require it more and derive greater benefit from it in the course of a fever which it must be remembered is a disease of debility and prostration, than the peasant who has not been habituated to the regular use of stimuli; but I believe that the very reverse is the fact, and that the greatest triumphs of the stimulant treatment in fever are to be found when it affects the agricultural peasant whose nervous system has not been excited either by the use of stimulants or by intellectual exertion. I know that some will object to this on the ground that our Irish peasantry are habitually intemperate; but this charge of intemperance is only one of the many calumnies that have been put forth with reference to our countrymen.

The Irish peasant is not habitually intemperate; neither do his means permit nor his inclinations direct him to be so. When he does indulge, it is on special occasions; but you seldom meet in hospital a case of injury to the general health produced by a long course of intemperance in the agricultural peasant. The case is no doubt different in the class of artisans who are the inhabitants of our large cities and towns. In this class we find, that when fever attacks an individual we can neither use stimulants with the same boldness, nor reckon on their success with the same confidence as in the more sober portions of the population. In this respect the Irish are not peculiar.

To a person who is not in the habit of examining patients very closely, the frequency and importance of the bronchial disease would not appear very evident or striking as he walked round the wards of an Irish fever hospital. We find the patient lying in bed; he is, perhaps, in a state of stupor, but from this he is easily roused. He is covered with petechial spots, red or livid, as the case may be. There is nothing remarkable about his breathing; he is not reported to have any cough; his pulse is probably 120, or between 120 and 130, and his heart is weak. The patient, with but little hurry in breathing, not complaining of any distress, and without cough, may be, and frequently is, at that very time, almost in a very advanced stage of the bronchial disease. When you apply the stethoscope, you are surprised at the great amount of bronchial disease it reveals, although the symptoms of this important affection are absent. One would expect, that in such a case there would at all events be lividity of the countenance from the non-arterialization of the blood; but here is one of the curious things connected with fever which it is extremely difficult to explain,—that you will often see but little lividity in such cases. At all events, it is not sufficient to draw the attention of the uninformed Practitioner to the condition of the patient's lung. In most patients labouring under bad typhus there is a peculiar dusky hue of the face; and this he would have whether the bronchial disease were present or not. But I have over and over again seen the most extensive bronchial disease, where every tube seemed to be half-filled, and yet little of the kind of lividity which we see in a case of asthma or of bad suffocative catarrh existed. Consider this fact for a moment, for it is full of matter for reflection. What does it tell you? It announces to you this highly-important principle, that in their formation, and in their progress, the secondary diseases of fever are, as it were, silent. They occur without the usual symptoms which are observed in indiopathic inflammations. They are not indiopathic inflammations, and, therefore, they have not the symptoms of them. Let us omit no opportunity of impressing this on our minds, that these diseases are not inflammations. They form silently—they advance silently. Consider for a moment the formation of a pustule in an ordinary case of small pox. The pustule gives no notice of its formation. You turn down the clothes, and you find the arm covered with vesicles; the patient has not complained, but you find there is the disease. So it is with respect to the bronchial disease in typhus; so it is with respect to the intestinal disease in typhus.

We see the bronchial disease forming in this singular and latent manner, without excitement or suffering of the patient. We see the same in the intestine; we see the same in the heart. The softening of the heart, as you will have abundant opportunities of seeing this season, is, in its commencement and all through, a silent process. The process of change up to its maximum alteration, and the process of retrocession up to the period of recovery, considered simply, when they are

not interfered with by accidental irritative inflammation, go on silently. The disease may proceed to its maximum without symptoms, and retrocede without symptoms. Now, under these circumstances, I have told you, that, when you apply the stethoscope, you find singularly extensive râles. These râles may be sonorous mucous, or crepitating; the amount of each of these characteristics' varying in every case, and in different portions of the lung, in the same individual. When you use percussion, you find that there is no remarkable dulness anywhere. I have not observed, at least in the bronchial affections of typhus fever, the curious result of percussion which we see in other cases of bronchial disease. We have not observed any increase of sonoriety of the chest. This is a very remarkable fact. In a large number of cases of acute inflammatory bronchitis, you observe, that, so far from the chest being dull, it is actually clearer than natural; and this is explained by the circumstance, that there is a great accumulation of air in the air-cells of the lungs,—that, in fact, every little air-cell of the lung is in a condition of extreme distension; it is full of air, and this air cannot find a ready egress during expiration, in consequence of the state of the bronchial tubes; and hence we have the increase of sonoriety. I have not observed this in cases of typhus fever where there was no consolidation of the lung; but, at the same time, it is to be noted, that we have not specially studied this point in fever cases. When the patient draws a deep breath, we frequently find that the râles go on increasing up to the very end of the inspiratory act; and, in certain cases the following curious circumstance is found,—and it is one of those which illustrate what I have termed the silent action of the disease —that on applying the stethoscope you will find perhaps but little râle, or a loose rattle in the larger tubes, or perhaps in some of the secondary bronchial tubes,—that is, during ordinary breathing. If you contented yourself with such an examination, you might come to the conclusion that there was very little the matter with the patient's lung—slight mucous disease in the lower part of the trachea, or in the very large tubes. But you may be altogether wrong; for, under these circumstances, it frequently happens, that when the patient draws a deep breath, you are startled with the extent and intensity of the râles running to the very end of the respiratory act. It is in this condition that the patient's life is seriously endangered; for if this bronchial disease does not retrocede, but continues to advance, it may happen that the patient will suddenly fall into a condition of asphyxia, tracheal rattle comes on, and he dies a mechanical death—in fact he dies suffocated. You may leave your patient apparently going on very well, and be summoned to him in a few hours, and find him *in articulo mortis*. This is a common thing, as I mentioned to you before, in patients in whom the bronchial disease has been overlooked or neglected.—*Med. Times and Gazette, July* 22, 1854, *p.* 77.

As a general rule, in prognosis, the occurrence of any vesicular eruption whatsoever in fever is bad. We have in fever several forms of vesicular eruptions. But, suppose a patient in the eighth or tenth day of fever, when he is otherwise going on well, you take his hand to fell his pulse, and you are surprised at seeing a vesicle upon his arm. Do not neglect that—do not overlook it. The mere circumstance of that solitary vesicle forming so silently, without any pain, without any notice, points out that there is mischief before you—that the case is likely to go wrong. It is a very important prognostic. Here we have on this patient an eruption of vesicles running rapidly to deep gangrenous destruction of the part, for some of the cavities formed by them are singularly deep, though circumscribed. Now, suppose that in place of that disease attacking the skin, upon the fourteenth day, on the the tenth day, or whatever day you please, in any case, a similar condition should attack the intestine. Suppose that the typhoid matter suddenly infiltrated a gland in the intestine, and that that should fall as suddenly to gangrene, and that there was a solution of continuity; you will at once see the progress of the worst form of the typhoid secondary disease of the intestine. You may look on this man as at this moment turned inside out, and that on the surface of his skin you are able to learn the history of the worst form of the typhoid ulceration of the intestine. This extraordinary condition of his surface no one will say is inflammation of his skin. Apply the same view, and will you say, that the disease of the intestine is inflammation of the intestine? Certainly not. Whether this man is to live or to die, I believe none of us can venture to say. Of course, the chances are enormously against him; but in the treatment of fever, you are never to despair so long as the patient can swallow. So long as he is able to take nourishment, so long as he is able to swallow wine, no matter how dreadful or apparently hopeless the symptoms may be, you are not to desert him, but—to use the phrase of our glorious sailors—you are to fight the ship whilst she swims. In a disease under the mysterious law of periodicity, every hour of compelled life is a clear gain. And, over and over again, you will find that your efforts will be crowned with success. You will see a patient lying with his back icy cold; you will see him pulseless,—his lungs filled up with secretion,—his belly tympanitic,—with dreadful diarrhœa,—the lower extremities gangrenous,—himself in a state of insensibility,—and yet, even under those circumstances, a recovery is possible. But that recovery can only be effected by the steadfast determination of the physician not to desert his post until the vital spark has actually fled; and, if you commit an error in holding on,—in hoping against hope,—at all events it is an error on the right side.—*Med. Times and Gazette, April* 29, 1854, *p.* 424.

2.—ON THE QUININE TREATMENT OF YELLOW FEVER.

By Dr. Wm. J. Cummins, formerly Surgeon Royal Mail Company.

[The treatment of yellow fever in the West Indies by large doses of quinine has been lately very successful, when done boldly and with promptitude, but the reverse when delayed too long.]

Yellow fever, as well as all other fevers, presents a striking distinction between the phenomena both of its second and third stages in different cases; for example, in one patient we may find, on the second day of the disease, a feverish condition, and in another, at the same period, the very reverse: in one, symptoms of inflammation of the gastro-intestinal mucous membrane; in another, a perfect freedom from indication of any such affection: in one, suppression of urine; in another, this secretion is copious, although of low specific gravity; in one, a dry skin, in another a moist; in one a yellow skin, in another the natural colour; in one hemorrhages of various kinds, in another none, &c.

Thus we find that the phenomena of this fever are by no means constant, and are frequently opposite conditions. M. Louis has proved that the same remarks are applicable to the anatomical changes discovered post mortem. How, then, can any specific for such a disease exist, unless it possesses opposite powers?

The answer to this question can alone be:—there are two principles of treatment for fevers; the one founded on our knowledge that these diseases tend to a spontaneous cure, or in other words, that the fever poison will wear itself out of the system, and terminate the disease by what we call crisis at a certain period, and consisting of remedies applicable to the effects of the poison, or the indirect symptoms produced by it, so as to retain life, and prevent irremediable local change, until crisis has arrived, and the fever has terminated of its own accord: the other is the specific principle of treatment, which assumes that all the inconstant and opposite phenomena are effects of a general cause, which is itself the first effect of the poison applied from without by contagion, or atmospheric contamination, and on the removal of which, secondary and tertiary effects frequently cease of their own accord.

Of these two principles of treatment, the former has been found very efficacious in the fevers of temperate climates, (with, perhaps, the exception of congestive typhus and scarlatina), because as these are not rapidly destructive of life or tissue, time is granted for their full use; but such is not the case in tropical fevers, and especially that known as yellow fever, where effect follows cause, and in its turn becomes a secondary cause, with such alarming rapidity.

For this reason, although I endeavour to treat both cause and effect in the latter disease, I have most confidence in the remedies for the cause. We shall see in the sequel how quinine treats the cause.

During the months of October, November, and December, 1852, I continued to prescribe quinine empirically, and my reliance on it as a

specific mode of cure increased daily, so much so, that during a lull of the epidemic, I determined to take the medicine myself, in order to test its effect in large doses, frequently repeated on the healthy subject.

The first few doses produced slight giddiness, or rather, lightness of head, and a complete state of nervous irritability, so much so, that the least unusual motion of the ship, or even the sudden entrance of any person to my cabin, or touching me, caused an involuntary start; indeed the entire surface of my body presented a morbid sensibility, though without pain. My pulse slightly increased in force and frequency soon after a dose, fell below the natural standard in fourteen or fifteen hours, and a dose taken at bed time caused restlessness and insomnia for several hours, followed by disturbed and unrefreshing sleep. I had no deafness, but palpitation and dyspnœa occasionally attacked me for a few moments at a time during the whole time I was cinchonised, and were always brought on by smoking, which I had to give up entirely. There was no irritability of the bowels produced in my own case, nor do I remember to have noticed that quinine caused it in any of my patients.

Thus, all the sensations I experienced when under the influence of quinine, induced me to suppose that in large doses it causes a direct increase of the vis nervosa, or, in other words, stimulates the vital energy of the nervous system. If such is its real action, how does it cure yellow fever? The answer to this question must be found out by studying the disease, as follows:—

1st. All agencies which cause a depression of *the vital energy* of the system, such as intoxication, fear, anxiety, improper food, deficient ventilation, insufficiently-drained residence, sudden removal to a hot climate, great heat, &c., &c., dispose the system to the reception of the poison which is the exciting ceuse of yellow fever.

2nd. Agencies which cause a continued stimulus of the system are prophylactic of the disease.

[Dr. Annesley, alluding to the general opinion that stimulants guard the system from the injurious action of malaria, writes:—"But the excitement thus occasioned requires to be kept up *moderately and equably*, not to reach above a certain pitch, or fall below it." He does not, however, think the action of ordinary stimulants could be so reguated.—*Tropical Diseases, p.* 416.

Dr. Rush (although considering intoxication a predisposing cause of yellow fever) instances several persons who were *constantly* under the influence of strong drink, and yet escaped the disease during the entire time of its prevalence, and he explains their immunity, by stating that the stimulus of ardent spirits excited an artificial fever, which defended the system from the epidemic.—*Yellow Fever of Philadelphia, p.* 100.

It has been remarked that the cholera poison, which resembles that of yellow fever in many of its peculiarities, though taking effect most

readily on those enfeebled by disease, or other cause, rarely attacks those afflicted with a disease *which keeps up a continued febrile action.—Medico-Chirurgical Review, Jan.* 1851, *p.* 51.

Quinine is a most excellent prophylactic of yellow fever, and of other diseases which cause a depression of the vital energy of the nervous system; and there can be little doubt that it acts by producing a tonic stimulus of that system, and thus antagonizing the primary operation of certain poisons.]

3rd. Thus, from considerations external to the disease itself, we may draw a conclusion that the *exciting cause* of yellow fever is a depressing agent; and if so, the first stage of the disease ought to be one of depression or minus vitality.

[This opinion is supported by various eminent writers, as Stokes, Adolphus, Nash, Stephens, &c.]

In addition to these authorities, I may state, that in all the cases of yellow fever I have myself watched from the commencement, I have noticed that a stage of depression of the vital powers is the first indication of disease having commenced; that this stage varies in its duration in different epidemics, in portions of epidemics. and in individual cases occuring at the same period of an epidemic; but is always longer and better marked in this than in the fevers of temperate climates I have witnessed; that in some cases it is continued throughout the entire course of the disease, so that death appears to result from a concentrated poison having directly abstracted the vitality of the whole organism. Such cases as these are described by M. Louis (Louis on Yellow Fever of Gibraltar, of 1828, translated by Dr. Shattuck, Jun.), at least he referred the death, in the third part of his cases, directly "*to a cause unequal in its operations*," as he was unable to account for it by the effects produced.

It may be well to mention here that this great pathologist, after having visited Gibraltar in 1828, for the sole purpose of making yellow fever his study, and having made many observations, and many post mortems, came to the conclusion, that because an unknown cause of the disease is the direct cause of death in many cases, "*the rejection of empirical treatment*" for yellow fever, "*no matter how absurd, is not warranted.*"—Ibid, page 333.

Now to recapitulate a little. From a consideration of the disease itself, of its known and unknown causes, of its prophylactic remedies, &c., it may fairly be inferred that the old doctrine of Cullen is applicable to yellow fever, viz.:—that a stage of diminished vital energy is the first link in the chain of its phenomena; from a study of the action of quinine on the healthy subject the conclusion may be drawn, that it increases the vital energy of the nervous system, and is thus not only antagonistic of the operation of the poison, but is also capable of removing its primary effect, or the cause of the subsequent lesions of function and structure; and lastly, from its clinical administration, it may be said that it is practically capable of curing yellow fever.

This last point leads us on to a new subject, viz., its mode of administration ; however, as some details on this point have been published in one of my former papers, in *Braithwaite's Retrospect* (vol. xxviii, p. 12), I need only remark, that as a large amount of nervous depression is present in yellow fever, much beyond the ordinary dose is requisite to insure its good effect. (The same remark is applicable to wine in typhus fever, witness the almost incredible quantities consumed by some patients, without intoxication following, and how suddenly, as Dr. Corrigan remarks, it must be left off when crisis becomes established.) I usually give from ten to twenty grains, repeated every second or third hour, and proportioned to the amount of depression present in each individual case. No rules can be laid down, but the best way of measuring the amount of depression is by its effects ; general congestion is the most prominent of these,—even the heart is often congested, or its action clogged.

Early deafness, or dilatation of the pupil, are bad signs ; they show a disposition to the establishment of the secondary effect of the quinine, *i. e.* the depression following the first effect of all stimulants ; and large doses are more apt to produce them than smaller ones, frequently repeated.

I think a long interval (more than from four to six hours if possible) should never be allowed to elapse between the doses of quinine, and when we wish to give up the medicine, it should be done by gradually decreasing the dose, rather than by laying it aside suddenly.

Quinine may cause complete amaurosis ; I had two interesting cases of this kind, which occurred almost simultaneously, and it is curious that they were both natives of the south of Europe, one of Spain, and the other of Italy.—*Dub. Hosp. Gazette, June* 15, 1854, p. 148.

3.—ON THE USE CHLOROFORM IN FEVER.

By Dr. Gordon, Physician to the Hardwicke Fever Hospital, Dublin.

[The fever poison sometimes acts on the brain in a remarkable manner, producing symptoms of disease both in the chest and abdomen, although those two cavities may be, in reality, free from disease. One of the most frequent characteristics of lesion of the brain is *insomnia*, causing, or followed by, delirium, subsultus, &c., and accompanied, probably, by congestion of the substance of the brain.]

There are two axioms laid down in Dr. Corrigan's late work on Fever, which should always be remembered : 1st, "the loss of sleep, if it continue, is of itself sufficient to kill ;" and 2ndly, "if even the shortest sleep be procured, some advantage is gained."

To procure this sleep, then, by means which will not do injury to the circulating or digestive powers, would appear to be the most rational mode of treating this complication, and the rapidity with which

the symptoms of great nervous exhaustion subside, when once sleep has been procured, proves the soundness of this mode of treatment.

To the different means which have been made use of for this purpose, I would now add the internal administration of chloroform. I have used it with the happiest results when all other means have failed, and I can speak with confidence of its certain and speedy action. The following case, reported by Mr. Richard Abbott, affords a good example of its effects, and the mode of its administration:—

Patrick Dempsy, aged 25, was sent from Santry to the Hardwicke Hospital, on the 8th of December; he was then eleven days ill of fever; his body was covered with dark-coloured maculæ; his pulse was 110, and very weak, his speech muttering and indistinct; he had subsultus in both upper and lower extremities. His head was shaved, he was ordered the bark mixture of the hospital, and half a pint of wine. Late in the evening he began to rave violently, and could not be induced to remain in bed; he was ordered large doses of hyoscyamus, and the back of his head was blistered; he was so violent as to require the use of a strait waistcoat all night.

December 9.—Has not slept since admission. Pulse 132; very weak. He continues constantly muttering and raving. Tongue dry and brown; eyes slightly suffused; head not very hot; respiration short, frequent, and irregular. He still requires the strait waistcoat to keep him in bed. He was now ordered twenty-five minims of chloroform in a draught, to be repeated in an hour.

After the second draught his agitation and restlessness ceased, and the waistcoat was removed. He dozed a little through the day, but only for a few minutes at a time. Towards night he again became restless and delirious; the same quantity of chloroform was again administered, and repeated in an hour, when he fell into a sound sleep which continued for nine hours. He awoke perfectly sensible; the subsultus had ceased, and his pulse had fallen to 100. He continued to improve, and in a few days was convalescent.

In this, and other similar cases, chloroform acted by producing anæsthesia of the sensory nerves, and exerting a paralysing influence on the muscular fibre; and this it appears to effect without depressing or deranging the nervous force, as is the case with sedatives in general, while it is altogether free from the objection of causing depression of the action of the heart, as is the case with some special sedatives. My colleague, Dr. Corrigan, has just treated a somewhat similar case by the internal administration of chloroform. I had an opportunity of daily witnessing the progress of the case; and, by his permission, I here append it, as reported by Mr. Edward Sargint:—

Dennis Beahan, æt. 20, a porter from High-street, was admitted into the Hardwicke Hospital, January 4, 1854, the fifth day of his illness.

On the sixth day he was thickly covered with bright maculæ. His tongue was loaded, but moist; his pulse 112; respiration 22; no abnormal sound in the lungs; no tenderness of abdomen. He is reported

not to have slept for two nights. His eyes are red and injected, and his head hot.

His head was shaved and cold lotion applied.

Seventh day.—Pulse 116: respiration 28; slept but little.

Eighth day.—Pulse 120; very feeble; respiration 32. Ordered bark and wine.

Ninth day.—Pulse 126; very feeble; respiration 32; head hot; constantly raving, and getting out of bed; no sleep; subsultus of hands; tongue dry; great difficulty of utterance. Vesicatorium nuchæ; eight ounces of wine.

Tenth day.—Pulse 130; weak; raving continually; difficult to restrain; requiring the strait waistcoat; constant talking; no sleep; tongue brown and dry in centre; thirsty; eyes very congested; pupils dilated.

Chloroform was now administered by inhalation, without any other effect than the pulse being slightly reduced in number. The patient was in no way quieted by it. Four leeches were now applied to the temples without any good effect. At 5 p.m., he took ʒss. chloroform by the mouth, and continued it every second hour till 11 p.m., when, as he did not sleep, and the delirium continued, he got same dose of chloroform every hour through the night. At 3 a.m. he was somewhat quieter, but the same dose was continued every hour till 8 a.m.

Eleventh day, 10 a.m.—Much quieter, but has not slept. Pulse 110; pupils natural size; subsultus nearly gone; tongue brown all over; sordes on teeth; bowels free; urine high-coloured, sp. gr. 1·020. Another dose of chloroform in same quantity was again administered; about twenty minutes after its exhibition he fell into a quiet sleep, which lasted for two hours. Shortly after waking, he took another half drachm of chloroform, when he almost immediately fell asleep, and awoke after several hours, much refreshed and quite collected.

His return to health was further indicated by the immense quantity of nitrate of urea, which an excess of nitric acid deposited from the urine.

In the above case the chloroform was longer in producing its effects than in any instance in which I have as yet used it. We learn from it, however, that we are not to be discouraged by the apparent failure of the first dose or two in procuring sleep, for, as in the present case, although actual sleep may not be at once procured, we may expect that a state of calm and quietness will be induced, which will soon be followed by "*Nature's sweet restorer, balmy sleep.*" We learn also from this case, that the inhalation of chloroform is, to say the least, useless in procuring sleep in cases of cerebral excitement in fever. I had, on one occasion before, in the Hardwicke Hospital, fully tried this mode of administering it; its inhalation was followed by general convulsive movements, very similar to an epileptic seizure, and I have not since administered it by inhalation in any similar case. Dr. Cor-

rigan carefully tried the effect of inhalation three times in the above case; each time without any good effect.—*Dublin Hospital Gazette, Feb.* 1, 1854, *p.* 11.

4.—*On Gout and Rheumatism.*—In a paper on this subject read before the Royal Medical and Chirurgical Society, Dr. Garrod shews that in 177 examinations of the blood, taken from 148 separate separate patients, in every case of genuine gout an abnormal amount of uric acid was found, while in acute rheumatism such was not the condition.—*Lancet, July* 29, 1854, *p.* 82.

5.—*Treatment of Gout.* By Dr. Hughes, Guy's Hospital.—[A few weeks ago, a man, aged 58, was admitted under the care of Dr. Hughes, into Guy's Hospital, suffering from chronic rheumatic gout, which affected all the joints of his hands. The attack had lasted for six weeks, and was increasing in severity. He had frequently before suffered from the same disease. Dr. Hughes prescribed the following:—

℞. Extract. acet. colch. gr. i., pulv. Doveri gr. ij.; ft. pil. ter die sumend. Pulv. Doveri, gr. v. o. n. sumend., et pulv. rhei cum magnesiâ ℈ij. o. m.

In a few days the pain had quite disappeared, and the man could sleep well, which he had not done for many weeks. Subsequently the decoction of bark was ordered as a tonic, and in about ten days he was well in every respect. Dr. Hughes remarked to the pupils present that the treatment adopted was one which he almost never found fail to afford a very speedy relief in all forms of gout. He believed the acetic extract of colchicum to be quite a specific for the disease, and was inclined to attribute the failures which some met with to impurities or adulterations of the drug.—*Med. Times and Gazette, July* 22, 1854, *p.* 86.

6.—ON GOUT AND ITS COMPLICATIONS.

By T. Spencer Wells, Esq.

[In a review of Mr. Wells's work on gout, it is pointed out that the chemical changes in the blood which constitute gout are the effects of derangements of nutrition. Mr. Wells reviews the doctrines of Liebig and Prout as to the changes which take place during the disintegration of tissue. The following is an extract:]

"Liebig has offered an explanation of these disordered processes; and, according to his commentators, his views lead to the inference, that gout is 'an inflammation in parts in which the usual changes which the oxygen effects are unable to take place, in consequence of an excess of the non-nitrogenous principles in the body.' (Bence

Jones, page 61). According to these views of Liebig, the acids formed in a state of health from the amylaceous, saccharine, and mucilaginous components of non-nitrogenized food, are converted into carbonic acid and water, by combining with oxygen. When any circumstances prevent or diminish the supply or action of oxygen, the changes are more or less retarded, and the lactic and acetic acids remaining in the blood must be thrown off from it. This is the derangement of the first stage of assimilation. Then, during the metamorphosis of tissue, oxygen being conveyed to the worn-out tissues, combines with their elements, and forms products of which lithic acid is the principal. A further supply of oxygen and water converts the insoluble lithic acid into soluble urea and carbonic acid, so that the disintegrated tissues have their elements so arranged as to reach the excreting organs in a soluble form. This conversion of lithic acid into urea is only complete when the supply of oxygen is sufficient; and in this way non-nitrogenized food, by monopolizing a great proportion of oxygen to secure assimilation, and prevent development of lactic and acetic acid, prevents the conversion of lithic acid into urea, and the former remains in the blood in a greater or less proportion, and appears in the urine. All other causes which diminish the supply of oxygen act in the same way.

"Dr. Gairdner, as we have just seen in his recent work on gout, supports these views, which, though very ingenious, unfortunately for the theory, are completely contradicted by observation at the bedside. According to them, a vegetable, carbonised, or non-nitrogenous diet, should increase the formation of lithic acid; while an animal, or nitrogenous diet, should diminish it. Yet observation proves that the very opposite of this is the case. Other things being equal, an animal diet increases, and a vegetable diet diminishes, the formation of lithic acid. Magendie found that lithic acid disappeared from the urine of carnivorous animals on restricting them to a vegetable diet. It is not present in the urine of herbivorous animals; and it was difficult to procure the converse of Magendie's experiment by making herbivorous animals take animal food,—they will not do so. Lately, however, M. Bernard thought of the ingenious, though cruel plan, of subjecting them to a prolonged fast. In this way they nourish themselves—they are fed by the absorption of their own tissues, and thus become for a time carnivorous animals. Then lithic acid appears in the urine. Dr. Lehmann, of Leipzig, proved, by ascertaining the quantity of urea and lithic acid excreted by himself in twenty-four hours, under four different systems of diet, viz., exclusively animal, mixed animal and vegetable, exclusively vegetable, and of food containing no nitrogen whatever, that a vegetable and non-nitrogenous diet diminishes, and an animal or nitrogenous increases, the quantity both of urea and lithic acid. More recent experiments, performed on ducks, by Boussingault, to show the quantity of acid excreted after the ingestion of various articles of food, confirm this view.

"These facts are sufficient to prove that Liebig's theory is unsound, and that practice founded upon it must be erroneous, and is likely to be dangerous. Some chemists also assert, that his numerical results are incorrect, and the tendency of the most recent researches is to establish the truths of the doctrine long since advanced by Dr. Prout, that urea and lithic acid are formed from the nitrogenized elements of disintegrated tissues, and from the nitrogenized food, which, being in excess, is imperfectly assimilated by the digestive organs. It is also extremely probable, though not absolutely established, that lithic acid is the special product of the disintegrated albuminous tissues, and urea of the gelatinous. This explanation is in perfect accordance with the results of practical observation, and proves the necessity of diminishing the supply of nitrogenized food when the formation of lithic acid in excess shows that the blood is receiving an inordinate supply of nitrogenized elements, either from the lacteals of the digestive organs, or from the lymphatics which return the products resulting from the disintegration of tissue."

An extract from the chapter on the medicinal treatment may be given as a specimen of the practical section of the work, and of the application of chemical discovery to bedside medicine.

"*Chemical solvents* are also very important remedies in gout. The solvents of lithic acid, or those which render it solvent by converting it into the lithates of potass or soda, may be occasionally required and used as palliatives, while we are endeavouring to remove the state of system on which the formation depends. The Vichy water, or the artificial substitute made by Dr. Struve, is the best form for administering them; half-a-pint being taken early in the morning, and again an hour or two before dinner. The liquor potassæ is less useful than the carbonates of potass or soda. Dr. Golding Bird recommends half a drachm of bicarbonate of potass three times a day, with five grains of citric acid, which is just enough to render the solution sparkling. The patient should use diluents freely at the same time, to assist in the solution of the lithic acid.

"No means of rendering the urine alkaline, however, can be persevered in without injuring the general health, leading to muscular debility, or a tendency to the formation of other urinary deposits. The borate of potass is strongly recommended by M. Bouchardat as a solvent of lithic acid. He gives fifteen grains in a tumbler of water several times daily. It is said to be less injurious than the alkaline salts just recommended, but I have had no experience of the results of its use. The phosphate of soda is another powerful solvent of lithic acid. It may be given in doses of a scruple, or half a-drachm freely diluted. It even lessens the pain, and allays the feeling of general irritation during an acute attack, and after the attack has gone off, promotes convalescence. The phosphate of ammonia, recommended by Dr. Buckler, of Baltimore, in doses of ten grains three times a day, has been tried by Dr. Golding Bird. He says, 'It has

always succeeded in keeping uric acid in solution in the urine, and in this respect, it has appeared to be at least equal, if not superior to borax and phosphate of soda; but I certainly have never seen it diminish the tophaceous deposits of chronic gout. In more recent effusion in the joints, in the subacute forms of rheumatic gout, it has certainly been of service.' I have, however, heard of very unpleasant symptoms following its use. Benzoic acid and benzoate of ammonia have been used with advantage, but Mr. Ure has not established his proposition that the benzoates are useful by converting insoluble lithic into soluble hippuric acid. The benzoate of ammonia is the most useful, as it has a decided tendency to promote perspiration. It is easily given by prescribing five grains of benzoic acid with an equal quantity of sesquicarbonate of ammonia, to be dissolved in two ounces of boiling water, and taken three times a day with a little syrup. But of all chemical solvents, I am disposed to regard the iodide of potassium as the most useful, as it has so great a solvent power on the lithate of soda, which is the most common impurity in the blood of gouty patients. A concentrated solution of the iodide dissolves the lithate of soda very readily out of the body, and to a much greater extent when the lithate is recently prepared and the solution is warm; but it has very little power of dissolving pure lithic acid. I have given it very extensively for the last thirteen years in almost all forms of gout, except during the acute attack, and in almost every case with the most encouraging results. I have tried it in doses from eight grains three times a day to one grain daily in divided doses. I have had patients who have continued the latter small dose for several months, and after carefully watching the effects of discontinuing its use and returning to it, I have been convinced, that the improvement in health which accompanied and followed its use, was really connected with, or dependent on, the use of even so small a quantity. It clearly affects the blood, for it may be detected in the urine; and I can only suppose that it must tend to keep small quantities of lithate of soda formed in the blood in a state of solution, although it is, I confess, difficult to see how so very small a quantity could act upon a sufficient quantity of lithate of soda to make any appreciable alteration in the condition of the blood. However this may be, the good effects are too uniform to leave any doubt as to the value of the remedy.—*Med. Times and Gazette, July* 22, 1854, *p.* 91.

7.—*Treatment of Rheumatism.* By Dr. Spurgin.—[The following case of rheumatism shows how successful the treatment may be even from a single prescription. This prescription was the following:]

℞. Liq. potassæ ℥xv., potassii iodidi gr. ii., mucil. acaciæ ʒi., aq. distillat. ʒxi. M. ft. haust. 6tâ quâque horâ sumend. Potassii iodidi ϑii., morphiæ muriat. ϑss., ung. cetacei ℨiss. M. ft. un-

guent.—Opii purif. gr. i., ext. colchici acet. gr. ii., pulv. scam. co. gr.iii. M. ft. pil. ii. Horâ somni sumend.—Feb. 5, 1854.

This prescription was persisted in from the 5th of February to the 14th, with no variation but the addition of fifteen drops to each draught of the tinct. lupuli, and the cessation of the pills. On the 8th, during my attendance, the patient took two seidlitz powders, which, as they failed in their object, were superseded by two drachms of Cheltenham salts in a tumbler of warm water the first thing in the morning; these acted in a most satisfactory way, producing plentiful secretions of bright yellow bile. The ointment was applied to each joint as it became affected with pain, heat, and tumefaction, giving considerable relief, and bringing out an eruption of red and irritable papulæ. It was curious in this case to witness the shifting character of the complaint, for it would one day be seated in the left wrist, hand, and fingers, and shoulder, the next day I found it attacking the other limb, the former having but little the matter with it comparatively; it was the same with the knees and ankles; an aching of the shoulders was a distressing symptom. Palpitation of the heart on exertion, with faintness, sometimes occurred when the disorder was at its height; there was also great paleness of the countenance, with contracted nose. Previously to my seeing him he had been ill above a fortnight, better and worse. Warm baths, salines with colchicum and sudorifics, and morphia, had been prescribed, but with no satisfactory result. The urine was red and scanty, without sediment. Pulse varying from 80 to 90, and weak.—*Med. Times and Gazette, April* 29, 1854, *p.* 445.

DISEASES OF THE NERVOUS SYSTEM.

8.—ON EPILEPSY.

By Dr. R. B. Todd, F.R.S., Physician to King's College Hospital.

[Dr. Todd makes the following clinical remarks in a case of epilepsy which he considered to depend on renal disease. He says, that from the frequency of epileptic attacks depending on renal disease, he has been induced to construct a theory of these fits generally:]

I hold that the peculiar features of an epileptic seizure are due to the gradual accumulation of a morbid material in the blood, until it reaches such an amount that it operates upon the brain in, as it were, an explosive manner; in other words, the influence of this morbid matter, when in sufficient quantity, excites a highly polarised state of the brain, or of certain parts of it, and these discharge their nervous power upon certain other parts of the cerebro-spinal centre in such a way as to give rise to the phenomena of the fit. A very analogous effect is that which results from the administration of strychnine, which is best seen in a cold-blooded animal, like the frog. You may

administer this drug in very minute quantities for some time without producing any sensible effect; but, when the quantity has accumulated in the system up to a certain point, then the smallest increase of dose will immediately give rise to the peculiar convulsive phenomena. The animal is thrown into a series of paroxysms of opisthotonos, which exactly imitate the phenomena which we often witness in tetanus, as it affects man and some of the higher animals.

This, then, is the humoral theory of epilepsy. It assumes that the essential derangement of health consists in the generation of a morbid matter, which infects the blood; and it supposes that this morbid matter has a special affinity for the brain, or for certain parts of it, as the strychnine, in the case just cited, exercises a special affinity for the spinal cord. The source of this morbid matter is probably in the nervous system, it may be in the brain itself. It may owe its origin to a disturbed nutrition—an imperfect secondary assimilation of that organ—and in its turn it will create additional disturbances in the functions and the nutrition of the brain. Probably, in no instance does an epileptic fit ever occur without leaving a damaged state of brain, which in some cases is permanent, in others remarkably transient.

According to the humoral theory, the variety in the nature and severity of the fits depends on the quantity of the poisonous or morbid material, and on the part of the brain, which it chiefly or primarily affects. If it affects primarily the hemispheres, and spend itself, as it were, on them alone, you have only the epileptic vertigo. If it affect primarily the region of the quadrigeminal bodies, or if the affection of the hemispheres extend to that region, then you will have the epileptic fit fully developed.

To give a more definite character to the humoral theory, we need to discover a morbid matter in the blood, in variable proportions, in every case of epilepsy. This desideratum has, as yet, been only partially obtained.

The clue to a discovery of this kind was first given by the observations of Prevost and Dumas upon the effect of excision of the kidneys. These observers found that the removal of the kidneys always led to an accumulation of a considerable quantity of urea in the blood, and was followed by convulsions and coma, an epileptic state.

After this, clinical observations by practical physicians, showed that disease of the kidney was apt to be followed by attacks of convulsions and coma, when the excretion of urine fell in quantity to a very low amount; and it was found that, in such cases, a considerable quantity of urea was present in the blood.

A connexion was clearly thus established between the presence of urea in the blood, defective renal action, and the epileptic condition. But whether the active poison is urea, cannot yet be decided. Frerichs, indeed, has lately affirmed, that it is carbonate of ammonia, a

product of the decomposition of urea. But even this is still *sub judice.* All that we really know is, that in certain states of diseased kidney, when the excretion falls below a certain point, urea will accumulate in the blood, and epileptic seizures will ensue; and, should the patient die, we find no brain-lesion to explain the phenomena; but we find unequivocal evidence of diseased kidney.

Still, imperfect as is the present state of our knowledge on this point, who is there that does not see, in the facts which I have detailed, a gleam upon the horizon, announcing the approach of some brilliant discovery, which no doubt the advancing state of organic chemistry will yet develope, and which will throw great light on the obscurest disease in the whole range of maladies, which affect the human frame?

You will find it convenient in practice to place the cases of epilepsy in three groups.

The first, and largest, is that in which I should place all those cases that are characterised by distinct, well-marked, often very severe symptoms, but in which we are not able to detect any distinct sign of lesion of the brain and spinal cord, either before or after death. Among these you find some which, from the frequency and the violence of the attacks, may be styled acute cases; but the great majority are chronic, and too many are not amenable to medical treatment; they afford an extensive field for the empiric to exercise his craft upon. Many of these patients will have fits for years, with variable intervals between them; in some mild, in others severe; yet, after death, notwithstanding the formidable character of the symptoms in some, and their long duration in others, we find no important lesion in the brain, which can be regarded in the light of a *cause* of the disease. And whatever change may have taken place in that organ, may be regarded as an effect of the disturbed consciousness and the impaired intellectual action, which follow each severe paroxysm, or the result of the shock and the injury to its nutrition conveyed by the excited state of the whole or a great part of it.

The second class of cases are those which may be grouped under the name of *renal* epilepsy.

You may place in the same category with the cases of renal epilepsy those in which the disease is associated with gout. I meet with many examples of this form of epilepsy occurring in men between 40 and 55. The patients are persons of decided gouty diathesis, and have gout rather of the asthenic kind, with a tendency to rapid effusions into the joints. In some, the gout may have shown itself but slightly in the extremities, and the patient may have been troubled with head feelings, giddiness, tinnitus, and may have found himself less capable of mental effort than usual. In the same class you may place the cases of convulsions occurring in the puerperal state, whether they take place after or before parturition; these are sometimes referrible to defective action of the kidneys.

And in the same class you may place cases which have connexion with syphilis, although the syphilitic poison may not have produced any organic lesion of a tangible kind.

Epilepsy arising from exhaustion or perverted nutrition of any kind may be referred to this head; such cases as arise from the abuse of the sexual powers in either sex, from prolonged mental effort and anxiety. In all such cases, a disturbed nutrition of the brain results which may generate the irritating matter on which the morbid phenomena depend.

The cases contained in this group are those which are most amenable to treatment, and which may be treated by a rational method.

To a third class we may refer all those cases in which the epileptic state is associated with organic mischief of some kind, either of recent or of slow formation.

In this class you may include cases in which a clot of blood has been formed on some part of the surface of the brain, and those in which a tumour has been developed in its substance, or has grown from the dura mater, or even from the cranium itself, into the brain; as also cases, in which a tolerably extensive white softening is taking place in the hemispheres, and others in which the epileptic condition seems connected with disease of the dura mater of syphilitic origin, in which, in fact, something like a node has been formed on this fibrous membrane similar in character to that which we often see on the periosteum of the tibia. Epilepsy, and that of a very acute kind, is also sometimes associated with acute inflammation of the dura mater, of which we had an excellent example in the hospital about six months ago. The man was in Fisk Ward, and died from the exhaustion consequent upon repeated attacks following each other with great rapidity. Upon examination, we found a small tumour growing by a pedicle from the inner surface of the dura mater, which had pushed into the substance of the brain, and around which inflammation of a suppurative kind had taken place.

[Dr. Todd leaves the precise nature of the uræmic poison undecided. He merely insists on its existence. He thinks, however, that the poison is *urea*. He says:]

In practice, you will meet with, for the most part, two classes of cases of this uræmic poisoning, as it is called; the one acute, the other chronic. In the acute cases, the urine is suppressed, or greatly diminished; and the nervous symptoms come on quickly, consisting of rapid coma, with more or less frequent attacks of convulsions at brief intervals. In these cases, very active purging with a powerful drastic, such as elaterium, is often attended with remarkable success; and it is also a good plan to blister the occiput and nucha freely, so to obtain an abundant serous discharge from the vesicated surface.—*Med. Times and Gazette, August* 5, 1854, *p.* 129.

First to be regarded, in the treatment of epilepsy, are rules of diet,

and of a general hygienic character. All these should have immediate reference to the easy fulfilment of the digestive function, and the restoration and the maintenance of a vigorous nutrition. I cannot attach any importance to the exclusive plans of a milk diet, or a vegetable diet, or an animal diet, except where there is some distinct and obvious fault of primary and secondary digestion. After all, indeed, there is no intrinsic difference between an indiscriminate vegetable diet and an animal diet, excepting this, (which ought not to be lost sight of,) that a patient who feeds on cabbages, cauliflowers, peas, beans, &c., takes, in addition to a good quantity of nutritious matter of the same nature as that found in animal food, a considerable mass of ligneous and inorganic matter, which passes through the bowels undigested. Persons who feed on an exclusive vegetable diet, Vegetarians as they call themselves, eat large quantities, and make large masses of fæces. There is, however, an important difference between an *amylaceous* or *farinaceous* diet and an animal diet. The former kind of food is digested chiefly in the small intestine, the latter in the stomach. And you will often find it advantageous to adopt the one or the other, according as the digestive powers of the bowel or of the stomach are at fault.

I will just remark here, that important as attention to diet is in all cases of epilepsy, it is especially so in those in which the attacks are apt to occur in the night, when the patient is asleep.

In connection with diet, I may notice remedies which exert a direct influence on the digestive organs, such as purgatives. These have no special anti-epileptic power; they are valuable agents in the acute epilepsy which is connected with renal disease, such drugs as elaterium being particularly applicable. But in the ordinary chronic epilepsy they have no special value, beyond their use in aiding and promoting the digestive function, and in diminishing an unduly plethoric state. In children or young persons in whom the presence of worms may be suspected, anthelmintic purgatives are obviously indicated.

So, also, it may be said of bleeding. It is mainly useful in diminishing an unduly plethoric state of system, and in reducing blood too rich in colour. Sometimes, too, there may seem to be a local congestion, which local bleeding may relieve. But as it is clearly desirable to keep the blood at *par* as to the proportion of its staminal principles, it is not expedient that either local or general bleeding should form a prominent part of the treatment of epilepsy. And I would add, that whatever congestion of the nervous centres may occur in such cases must be regarded rather as the effect than the cause of the epileptic paroxysm. Nor is there any fact in pathology better established than that a state of anæmia, or a poor and watery blood, is favourable to the development or the continuance of the exalted polarity of the nervous centres which belongs to many, if not all cases of epilepsy.

Among the hygienic measures, a regulated system of exercise cannot be too strongly recommended; but it must be carefully adjusted to the

powers of your patient. In persons of good muscular strength, I have seen remarkable benefit from strong and prolonged exercise. Active muscular exertion has, beyond doubt, a powerful influence in modifying general nutrition, and that of the nervous system in particular. Another very important hygienic measure is the regulation of sleep, which should not be too long at once. Many cases of epilepsy are benefited by taking sleep for two or three short periods in the twenty-four hours. It is desirable that the waking hours should not be too prolonged, nor extended to a late hour at night. There is a very remarkable connexion between sleep and epilepsy, (indeed, there is an analogy between the condition of unhealthy or perturbed sleep and that of epilepsy), which is one of the most interesting points of investigation in connexion with the malady.

Let me now briefly refer to some of the drugs that afford most prospect of use in the treatment of epileptic cases. Most of these have been used in consequence of their exhibiting a certain amount of physiogical influence on the nervous system. As to others, it is difficult to trace the circumstances, which led to their admission among the *juvantia* in this disease. First in the list I would place those drugs which belong to the narcotic class—opium and its various preparations, belladonna, henbane, conium, camphor. These certainly exercise a very powerful influence in calming the excitable state of the nervous system which accompanies epilepsy. They are applicable chiefly to the more acute cases. and especially when epileptic delirium is threatened or present. You should never administer them except when you have full opportunity of watching your patient, or of confiding him to the care of another. This remark, I need hardly add, applies chiefly to belladonna and the preparations of opium.

Belladonna has been greatly extolled by some French writers, far more than it deserves, as far as I can judge from my own experience. It is a remedy which leaves no permanent ill effect, and which, I think, is worthy of a more extensive trial in this country, than it has yet received. That it exercises a physiological influence on the nervous system, no one can doubt, who has administered it for forty-eight hours; but as it induces a state of pupil very like that which is so common in epilepsy, one might fear that it rather favoured the epileptic state. A good series of clinical observations are yet wanting upon the effects of this drug. The preparation chiefly used in France is the powdered leaves of the plant.

Opium is often useful in cases in which the fit is apt to occur in the night or early morning. A full dose given at bed-time will prevent the development of the fit.

The valerian was used formerly in epilepsy more extensively than now. It is a medicine, however, which should not be despised or discarded. Its use promises most in the complications of hysteria and epilepsy. Its virtue depends upon the presence of an oil or acid which is capable of entering into combination with metallic bases, as zinc and

iron, and which also combines with quinine and other alkaloids. You may give it either in scruple doses of the powder two or three times a-day, or in infusion, or as an ammoniated tincture, or in combination with quinine or the metals.

Other nervine remedies may be added to your list, and you should keep them in reserve to employ as occasion may require, such as musk, castor, assafœtida, stramonium, sagapenum, garlic, remembering the moral influence of a change of drug. I cannot say that the evidence of any special power of an anti-epileptic nature in any of these drugs is at all satisfactory.

In this class of drugs you may place the Sumbul, of which a tincture is prepared by Mr. Savory of Bond Street. One of the earliest cases in which I employed it, seemed to benefit very decidedly by it; and I have since used it many times with unequivocal good, so as to lead me to look upon it as a useful stimulant and antispasmodic remedy.

Digitalis has been greatly lauded by some. It may act favourably partly by its diuretic properties, and partly by its influence on the heart's action. There is quite sufficient evidence of its utility to warrant its being retained among the list of remedies applicable to this disease, and to justify its occasional cautious use.

The cotyledon-umbilicus may rank with digitalis as a remedy for epilepsy. I cannot say that I have met with a case distinctly benefited by its use; but the cases published by Mr. Salter, and those recorded by the late Dr. Graves, indicate that it possesses a certain anti-epileptic power. I incline to think it acts by a diuretic influence.

There are other drugs obtained from the vegetable kingdom which I think deserve a trial in epilepsy. One of these is the Achillæa millefolium, which, in the form of a decoction, exerts a very decided diuretic influence. On the same principle, taraxacum may do good in certain cases, as in those in which the epilepsy has a relation to gout in the system.

The alkaline salts, especially the bicarbonate and the nitrate of potass, appear to me often to be very useful on a similar principle, namely, by increasing the activity of the kidneys.

The cardamine pratensis was greatly extolled by Sir George Baker. Turpentine has been used chiefly from its anthelmintic properties. It is a remedy that should be used very carefully, and never if there be suspicion of organic disease of the brain.

The *selinum palustre*, or *peucedanum montanum* is highly commended by Herpin, on, as I think, insufficient grounds. The plant is very difficult to procure, and I have not yet been able to try it.

The various metallic tonics have been and are extensively used in epilepsy. Of these the safest is zinc, the sulphate, or the oxide. Either of these preparations may be given without any disadvantage that I know of for a considerable time, and in large doses. Some time ago I gave to a patient in this hospital as much as half a drachm of sulphate of zinc thrice a-day without any sensible effect. The dose

had reached that amount by gradual increase. Whether these drugs exercise any special favourable influence I am unable to say; all I know is, that, under their long-continued use, patients sometimes ceased to be troubled with fits.

The various salts of iron are also applicable to the treatment of this disease, and especially to cases in which the blood is poor in hæmatin. But they are not so harmless as the salts of zinc. Their tendency in some persons to excite headache precludes their use with them; and they often disturb digestion, and on this account cannot be persevered with. The saccharine carbonate, the sulphate, the citrate, and the tincture of the sesquichloride, as well as Griffith's mixture, are the preparations of iron which you will find most suitable to the generality of cases.

Salts of copper and of silver are also used for epilepsy, with, I think, at best, but very doubtful efficacy. To the cautious use of the ammonio-sulphate of copper I see no material objection; in too large doses it may irritate the gastro-intestinal mucous membrane, but such irritation is easily removed.

There is, however, a much more serious objection to the use of the salts of silver. The nitrate and the oxide are the salts employed. Now, there is no doubt that the nitrate discolours the skin. We see repeated examples of this in the streets; scarcely a day passes that I do not recognise persons in the streets, as epileptics, who had been treated with nitrate of silver. If the nitrate of silver were a certain, or even a very frequent cure for this formidable disease, well and good; but, seeing that it is very far from being entitled to the credit of being such a remedy, I say, that we have no right to make black-amoors of our patients, and to stigmatize them for ever as epileptics, and too often *as epileptics uncured*, on the mere chance of doing good by nitrate of silver. No doubt few would hesitate long between choosing a discoloured skin, and being the subject of a disease so fearful as epilepsy. But it seems to me, that the remedy ought to be a specific, to justify the practitioner in administering it, with the strong probability there is of producing such an effect. Remember, too, that the nitrate of silver stain communicated in this way is probably indelible, and that by an experienced eye it is not to be mistaken. I have seen it after ten and fifteen years from the administration of the drug.

Finding, then, no special virtue in the nitrate of silver as against epilepsy, and that it is very apt to produce the serious result to which I have referred, with whatever care it may be administered, I have long since abandoned its use. I fear the oxide of silver is not more promising either as to its influence on the disease, or its freedom from the discolouring power.

Indigo has likewise been given in epilepsy, but with no other result, as far as I can learn, than what Penil observed, that it turned the nails of his patients blue.

The time has, I think, now arrived, when we must look in another

direction for an anti-epileptic remedy. We must turn our attention more particularly to those substances which are capable of being exhibited by inhalation, of being brought to bear upon the nervous system without being subjected to the action of the gastric fluid.

Ether and chloroform, it is now well known, are capable of being taken into the blood in this way. Some years ago I tried experiments as to their power of controlling the convulsions produced by strychnine, and with the result of finding that they possessed that power very completely. As long as an animal is fully under the influence of ether or chloroform, no convulsion can be produced. I was thus led to try their inhalation in epilepsy. I have chiefly employed for this purpose chloroform, because it is less disagreeable to patients to take. The results of my observations so far, are these,—that in the more acute forms of epilepsy the inhalation of chloroform has considerable influence in controlling and modifying the attacks; it has also a very decided power over epileptic delirium; and over some of the concomitants of epilepsy, as the violent convulsive jerks of the muscles of both upper and lower extremities, which are always most distressing, and often very dangerous. It has a marked and immediate power over puerperal convulsions; and I am glad to see that my friend, Professor Simpson, of Edinburgh, sanctions, by his high authority, its use in such cases. It is also applicable, and with advantage, to the convulsions of infants, and to laryngismus stridulus.

There is no use in employing chloroform in epilepsy unattended by other symptoms, when the attacks are at uncertain times and at long intervals; nor do I advise you to attempt its use, unless the patient is fully under your control or will heartily co-operate with you. And, in cases where the heart is affected either functionally or organically, it should never be used. Its inhalation at two or three stated times of the day, exercises a very calming effect on the nervous system, diminishing its excitability very materially. But this must be carried on over a long period of time—many months, and even years; and the dose may vary from twenty to sixty minims, according to the effect produced, and you should aim at obtaining a gradual, not a rapid effect. The patient should always remain in the horizontal posture during the inhalation, and for at least half an hour after it.

You will expect me to say something on a proposal made within the last few years to open the trachea of patients suffering under severe epilepsy, with the two-fold object of preventing the fits, or of obviating their effect in creating undue distension of the cerebral blood-vessels, if they should occur.

Before a proposition of this kind can meet with general favour from practical men, it must be satisfactorily proved that the hypothesis, or theory, if you will, from which the proposal emanates, is essentially sound, and next it must be shown that the operation is in itself one that is not seriously dangerous to life; and lastly, it ought to be in the highest degree probable that the attacks will not recur after the

operation has been performed. It is, as you know, contrary to all principles of sound surgery to perform an operation unless it be for the complete removal of the disease, or at worst, to stave off the re-appearance of the malady to the latest period.

The hypothesis from which this proposal emanates assumes that the exciting cause of all the evil in severe epileptic paroxysms, is the contraction of the muscles of the neck and glottis, which induces and maintains a congested state of brain, which, in its turn, excites and keeps up the convulsions. I have elsewhere examined this congestion theory in detail, and I am not aware that the arguments which I then advanced against it have ever been fairly met. I have also shown, by experiment, that epileptic convulsions may be excited in dogs which had been freely tracheotomised previously, full provision having been made for the free ingress and egress of the air; and also in a dog in which the muscles of the glottis were paralysed by section of the recurrent nerve. These experiments the advocates of tracheotomy in epilepsy have found it convenient to ignore.

Again, I would ask, is tracheotomy either a very simple or a very safe operation? I do not think that the results of the operation either for other diseases, or for epilepsy, are very satisfactory. Patients often die from the effects of the operation, exhaustion, erysipelas, diffuse inflammation of the areolar tissue spreading into the mediastinum.

And, lastly, what are the prospects that, the operation having been done, the evil will not recur? This can only be ascertained by that which I cannot recommend, frequent experiment. I would only make this remark, that those who have the courage to try these experiments, and feel themselves justified in so doing, must carefully watch the results, and endeavour to draw a proper distinction between the actual physical effects of the operation, and that mental influence which, as I have shown you in a former part of this lecture, undoubtedly tends to stay the disease, when any new treatment is adopted, or any considerable change takes place in the patient's position and circumstances.—*Med. Times and Gazette, Aug.* 12, 1854, *p.* 154.

9.—*Epilepsy treated by the Bark of Black Elder Tree.*—The emeto-cathartic and hydragogue properties of the second bark of black elder (sambucus nigra) have long been known, and used in various forms of dropsies; but no mention has hitherto been made of the employment of this substance in the treatment of epilepsy. M. Bogetti relates five examples of cure obtained by this remedy alone. In order to prepare it for administration, the branches of the elder, of one or two years, are taken; the grey bark is removed, and the second bark which remains is scraped off. About five ounces of common water, hot or cold, are poured upon two ounces of the bark,

and the infusion is allowed to stand forty-eight hours. The infusion, properly strained, should be taken at intervals of a quarter of an hour for a certain number of times when the fit is threatening, the patient fasting. It should be resumed every six or eight days.—*Rev. Therap.* —*Med. Times and Gazette, July* 29, 1854, *p.* 119.

10.—ON THE USE OF CHLOROFORM IN TETANUS.

[In the 'Medical Times and Gazette' will be found a very interesting series of reports of cases of tetanus, forty-three in number, of which eleven recovered. The editor makes some good remarks on the use of chloroform as follows:]

The following propositions appear to be warranted respecting it:—

1. That, in the great majority of cases, inhalation of chloroform may be practised with safety as regards immediate consequences.

2. That it is always effectual in allaying spasm for the time.

3. That it exerts, however, no preventive influence whatever, the spasms usually returning, with even increase of severity, very shortly after its suspension.

4. That its continuous administration over long periods of time is not to be recommended, since the patients sink at least as fast, if not faster, than when the disease is allowed to display itself.

5. That it is of great benefit in certain protracted cases simply as an alleviant of the pain. In some of these it will procure rest for periods often of an hour or more after the suspension of the inhalation, and acts altogether much more favourably than in the earlier stages.

6. That, in certain protracted cases, it is of the greatest use in enabling a patient, while in a state of half-insensibility, to take food, who would otherwise be unable to swallow.

7. That, excepting for the two last-named purposes, its use does not seem to be attended by any commensurate benefit, while it may much interfere with the action of other remedies, and, very possibly, be actively injurious itself.

These conclusions must be understood to apply only to chloroform inhalation, since, from the cases published, there appears reason to believe that the results of that of ether have been more favourable. As, however, the latter agent has not been, of late years, used in London, we have no means of judging as to the proportion of cases in which it did not relieve, or whether in any it appeared injurious.

It may be worth a thought whether the employment of anæsthetic vapours *externally* in cases of tetanus might not promise some benefit. The spasms are for the most part reflex, and excited by peripheral irritants. A bath of vapour might be easily given by covering the bed with an impervious material, and exposing beneath the clothes a sponge saturated with ether. The patient's head should of course be left out, and the clothes well tucked in round the neck.

[These cases show the relative value of other modes of treatment. Two cases recovered under the use of belladonna ; two cases showed the uselessness of tracheotomy ; one recovered during the exhibition of sesquioxide of iron and Dover's powder. In several cases Indian hemp seemed useful. In one case nicotine controlled the spasm and repressed constitutional disturbance. On the whole, vegetable sedatives seemed most beneficial.]—*Med. Times and Gazette, June* 17, 1854, *p.* 621.

11.—*Cure of Tetanus.* By Dr. Edward Hodges, Somerset.—[In this case a boy, aged twelve, lacerated his great toe, which necessitated the removal of a part of it. In about twelve days the patient could not open his mouth, and other more general symptoms of tetanus followed :]

On the 24th January, the application of morphia (the hydrochlorate) to the wound was substituted for its internal administration —first in the form of powders, as the poultices were renewed, and subsequently by means of a piece of lint moistened with the following application :—Hydrochlorate of morphia, one scruple ; tincture of hyoscyamus, two drachms ; water, three ounces. This local treatment was continued until the 11th of February, when the general tetanic symptoms having much diminished, and the patient being able to protrude his tongue slightly, and to masticate a little, the foot was dressed and bandaged. The lad recovered perfectly, and is now to be seen daily about this neighbourhood, driving his father's (a baker) cart.

Though a considerable quantity of calomel was administered during the stage of arterial excitement, and also of tartar emetic, the gums were unaffected by the former remedy, and the latter produced no degree of emesis. On the subsidence of this stage, and the consequent discontinuance of the antiphlogistic treatment, the most liberal diet that could be taken by the spoon was allowed, and also some good bitter beer, and subsequently wine in small quantities.—*Lancet, Aug.* 5, 1854, *p.* 101.

12.—*On Idiopathic Tetanus.* By Dr. Hassall. Physician to the Royal Free Hospital.—[The following case of idiopathic tetanus is chiefly interesting as showing the use of chloroform in mitigating misery. The difficulty is to know how far to push the remedy with safety. The patient was a boy of fourteen. The affection could not be traced to any injury. The exacerbation of the spasms recurred every two or three minutes :]

The patient was ordered a hot bath and an enema of warm water ; the enema did not return, nor did the bowels act, owing most probably to the spasm of the sphincter ani. The following draught was also to be given every four hours :—Chloroform, five minims ; Hoffman's anodyne, twenty minims ; water, one ounce.

Same day (Nine P. M.)—The patient states that the warm bath relieved him, and he expressed a wish for another, which was accordingly given him. He desired very much to go to stool, but could not pass anything, though he used expulsory efforts.

Same day (Ten P. M.)—The exacerbation of spasms has been recurring at intervals of only a minute, during which the agony of pain was intense and breathing suspended, so that fear was entertained that the poor sufferer would die of apnœa. He was now brought under the influence of chloroform by inhalations; under its influence every muscle became completely relaxed, the lower jaw dropped, the breathing was tranquil, and the pulse fell from 160 to 120. The countenance of the patient was also very favourably modified by the chloroform, whereas under the fits he had a face expressive of exquisite agony; "the forehead corrugated, the brow knit, the orbicularis muscle of the eye rigid, the eyeball motionless and staring, the nostril spread, the corners of the mouth drawn back, the set teeth exposed, and all the features fixed in a ghastly grin—the true risus sardonicus." As soon, however, as he was brought under the influence of chloroform, this frightful "nightmare," as it were, passed away, and a placid smile, indicative of peace and freedom from pain took its place. So marked was the power of chloroform over the system that on the least cessation of its administration the contraction of the muscles immediately returned.

The patient was kept in a state of anæsthesia until six o'clock the following morning—a space of eight hours—but tetanic spasms returned with equal severity as soon as the influence of the chloroform passed off. The poor boy died at eight A. M.—viz., two hours after he had ceased to inhale chloroform, (immediately after a severe attack of spasm,) partly from apnœa, and partly from asthenia, being exhausted by the intense muscular action and exquisite pain.

No post-mortem examination could be obtained.

The above case was manifestly an acute one, rapidly running its course, and terminating fatally in about forty-four hours after the commencement of spasm; it was also, as far as could be ascertained, idiopathic.

The patient was kept in a state of anæsthesia for the space of eight hours, during which time he was quite free from pain or spasm, and slept quietly. No signs of the fearful affection could then be discerned, but the invisible cause, lying dormant for the time, rendered the disease manifest in all its previous virulence, as soon as the agent that kept it in abeyance was removed.

We, of course, cannot say that chloroform is a *remedy* for tetanus, but with this compound we have the power of subduing for many hours the rack and torture of a fatal malady, and prolonging life. Perhaps the disease might, in favourable instances, be conquered by the anæsthetic agent. At all events, chloroform deserves a fair trial before it is relinquished; if it fails as a specific remedy, it will yet remain a

very useful palliative, and we are justified from the nature of the disease in using any agent that will subdue pain, allay spasm, and calm the distressing agitation of the unfortunate creatures who are attacked by this dreadful malady.—*Lancet, June* 3, 1854, *p.* 597.

13.—*Treatment of Chorea.*—Sulphate of zinc is undoubtedly the remedy in most general use for the treatment of the ordinary forms of chorea in the London Hospitals. It is usually given in small doses at first (gr. j. to ij.) and gradually increased if the disease do not yield (gr. v. to viii.) Among other remedies in much esteem must be noticed the various preparations of iron, quinine, valerian, the ammonio sulphate of copper, the iodide of zinc, and arsenic. In St. Thomas's Hospital Dr. Barker frequently prescribes, in severe cases, the last-mentioned remedy. He states that he has several times cured very quickly by its means, cases which had proved obstinate under other treatment. The dose is, of the liquor arsenicalis, three minims for a child, and from five to six for an adult, given in a bitter infusion three times daily. Chorea, in its more ordinary forms is, as is well known, curable with tolerable certainty by almost any of the nervine tonics; hence the number of specifics which have been boasted against it.—*Med. Times and Gazette, July* 1, 1854, *p.* 11.

14.—ON THE USE OF CHLOROFORM IN DELIRIUM TREMENS.

By Dr. B. G. M'Dowell, Physician to Whitworth and Hardwicke Hospital, Dublin.

[In the exhibition of chloroform in cases of delirium tremens, the practitioner should ever remember that chloroform is a powerful sedative—it exhausts—depresses. It can, therefore, only be used in those cases which are the result of direct stimulation of the brain,—sthenic cases,—cases which are caused by some sudden, short, and excessive use of alcohol. In those cases which are caused by suddenly *leaving off* the stimulant, as in some habitual drinkers, chloroform would be highly dangerous. This is a very important distinction to make. Dr. M'Dowell's first case seemed to be one of the *sthenic* character. The patient was violent, and altogether in a high state of excitement.]

Chloroform was prescribed; half a drachm in a draught to be given every second hour.

After the fourth dose he fell asleep. At first his sleep was frequently interrupted, and he awoke often, but soon it became more profound, and he slept all night. Next morning we found him still sleeping, the pupils were somewhat contracted; on rousing the patient, we found that he was perfectly rational, and that no delusions of any

kind remained. After getting some food, he again fell asleep, slept for nearly twelve hours, and awoke perfectly convalescent. Discharged November 16th.

[The second case was equally successful.]

On admission, his manner was nervous and agitated. He was rational and collected in his answers, but, when left to himself, his mind wandered greatly, and he was unable to control his thoughts. The surface of his body was bathed in cold perspiration. The pulse was full and soft, there were remarkable tremors of the tongue and hands, and total loss of appetite.

Treatment.—Tepid affusions to the head. Fifteen minims of tincture of opium, in an ounce of camphor mixture, every third hour.

November 19. Slept none last night; disease more fully developed; patient raves and talks incessantly, but is easily persuaded to remain in bed; tongue dry and furred; urine scanty and high-coloured; bowels confined; skin has ceased to perspire.

℞. Mist. rosæ catharticæ ℥iv. statim. Thirty minims of chloroform every second hour, after the bowels are freed.

Towards evening the patient became so exceedingly violent, that the strait-waistcoat had to be used.

November 20. Slept little during the night, towards morning he had some hours' sleep, and the medicine was omitted. He is rational and sensible, answers questions correctly, and is evidently disposed to sleep more; the pupils are somewhat contracted.

To have good beef tea during the day, and no medicine until the evening, when ℥i. of chloroform is to be given.

November, 21. Slept almost all night; and with the exception of some nervousness of manner, no trace of the disease remains.

The anodyne powers of chloroform are well illustrated in the preceding cases, in both of which the disease was fully developed, and the nervous system in a state of high excitement. In the one case, two, and in the other, three drachms of chloroform, administered in half-drachm doses, at short intervals, were sufficient to subdue the functional excitement of the nervous system, and to induce sleep.

Sleeplessness is the principal source of danger in delirium tremens: the longer the system is deprived of sleep, the greater is the degree of nervous exhaustion, which too frequently terminates in death, preceded by convulsions. Hence, the absolute necessity of directing our treatment to this symptom especially, and the value of any remedy on which we can rely for procuring sleep.

In detailing these cases, it is far from my intention to recommend chloroform in preference to opium, in the treatment of delirium tremens. There are, no doubt, many cases which will yield as promptly to opium, as did the cases here narrated to chloroform. But I conceive it may prove of great advantage to know that chloroform is capable of controlling the disease by its direct sedative and anodyne properties, for the following reasons:—

First; because there is a form of the disease in which opium is generally inadmissible; I allude to what has been termed the sthenic variety of delirium tremens, which is produced by the direct influence of stimulants, and is consequently more connected with active congestion of the brain, than the more common form of the disease, which is developed subsequent to the relinquishment of stimulants, and is consequently associated with a depressed condition of the nervous force. In the former affection, we generally rely upon purgatives, and the careful application of cold to the head; in some few cases leeches may be applied; but if these means fail in procuring sleep, much danger is to be apprehended; the exhibition of opium is hazardous, yet death will certainly ensue, if sleep be not obtained. Under these circumstances, I conceive chloroform may be given with the greatest advantage.

Secondly; because it occasionally happens, even in the asthenic form of the disease, that opium fails altogether to procure sleep, and seems to increase, rather than to allay the excitement of the nervous system. Under these circumstances, and especially when the tongue becomes dry, and the pupils are contracted, the use of opium cannot safely be persisted in. But in chloroform we have a remedy, which, from experience, I can confidently recommend to meet the exigencies of such a case: the following instance is adduced in illustration of this remark.

Case 3.—In the month of September, of last year (1853), I attended, with Mr. Gorman, of Henry-street, a gentleman of about thirty years of age, who laboured under delirium tremens for the first time. When I was summoned to see him he had been ill for three days; the opium treatment had been most fully and properly employed, yet he had not slept for forty-eight hours; all the characteristic symptoms of the disease were fully developed: the patient never for a moment ceased talking, the activity of his mind was astonishing, and the mental delusions under which he laboured were of the most extraordinary and varied character. Tepid affusions were employed, and morphia given in full doses.

On the following day, we found that he had not slept, and that his symptoms were in no way improved. At times he was very violent, but was easily persuaded to do as he was desired.

The next day found him still perfectly sleepless. It was now four days since he had had any sleep. He was so hoarse as to be unintelligible from incessant talking and vociferating; eyes congested; pupils much contracted; tongue dry, and protruded with difficulty; urine scanty; tremors of the hands and arms, with subsultus tendinum. His strength was evidently failing, and he no longer struggled to leave the bed; the pulse had become smaller and more rapid. He was not sinking from want of stimulants or of nourishment, for both had been given in sufficient quantity, but death was impending for want of sleep, and opium had been pushed to the uttermost. Under these

most unpromising circumstances, I recommended chloroform to be given internally; a drachm was immediately given, and repeated in an hour; soon afterwards he slept for a few minutes; a third dose, also containing ʒi. was now given, and soon he slept soundly. The next day he was entirely free from every symptom of the disease.

In conclusion, I have only to remark, that an extended experience is required to determine: 1. Whether chloroform may be safely relied on in the treatment of delirium tremens; 2. The comparative advantage of a mixed treatment; *i. e.*, combining the use of opium, with that of chloroform; or 3. How far success would be rendered more certain by adopting the opium treatment in the first instance, and following it up by the administration of chloroform in full doses. —*Dublin Hospital Gazette, Feb.* 15, 1854, *p.* 25.

DISEASES OF THE ORGANS OF RESPIRATION.

15.—ON CONSUMPTION.

By Dr. Theophilus Thompson, F.R.S.

[With respect to the symptoms of phthisis, some are more local, and others more constitutional. The following remarks of Dr. Thompson refer to those symptoms which are more obviously constitutional:]

In a large proportion of individuals affected with phthisis, at a very early period of the disease, and even in the members of consumptive families, amongst whom distinct manifestations of the malady have not yet appeared, you may observe a peculiar, transparent appearance of the edge of the gums, where they are reflected over the teeth, apparently resulting from fineness of structure; in other instances, especially if erethism of the mucous membrane exist, you may observe a border of lake or vermilion tint, such as we might suppose to originate from congealed blood in the capillaries attracting oxygen with great activity.

Three years since, when my attention was first directed to this inquiry, I observed this appearance in twenty out of twenty-one consecutive cases of phthisical males, and in thirteen of twenty-one phthisical women. More recently, on repeating the investigation, the records being kept by a different assistant, thirty of forty-three women, and ninety-two of one hundred men exhibited one or other of the modifications of gingival border which have been described. I have pursued the inquiry to some extent as respects this condition of the gums in other diseases, and have hitherto rarely observed it, except in persons who either were the subjects of phthisis, or who have subsequently become so. The wax model which I now show you represents this appearance in a member of a consumptive family. It preceded the occurrence of cough, and of prolonged expiratory murmur; but the disease has made rapid progress, and is now in the last stage.

You may observe that the teeth are perfectly free from tartar. The festoon which I have described differs from the uneven border of redness produced by that source of irritation, although the presence of tartar may doubtless modify the condition occasioned by tubercular affection.

In some doubtful cases Mr. Harrison did me the favour to remove the tartar; and although the vividness of the border was subsequently in some degree lessened, the appearance remained fully as characteristic as ever. The diffused inflammatory redness resulting from the administration of mercury, or other irritating medicines, is readily distinguishable from the clearly defined border under consideration; and if any similar state should be found in cases of purpura, the concomitant circumstances would probably be adequate to remove any uncertainty regarding the cause. I believe this line to have much diagnostic value in early, or, still more, in threatened phthisis, when unaccompanied by any other morbid condition adequate to explain its occurrence. You perceive that in the model the teeth are represented as fine and delicate. It has sometimes been asserted that the teeth of the consumptive are usually remarkably good. There is a fallacy in this statement. In consumptive persons they are sometimes carious, but usually peculiarly delicate, pearly, or glassy; teeth having the firm, ivory-like aspect characteristic of a healthy condition, being in such persons rare. When you reflect how soon they obtain their characteristic organization in the body, I think you will agree with me that the circumstance thus briefly noted furnishes powerful evidence for the opinion I am endeavouring to illustrate, that phthisis is for the most part related to a constitutional affection, associated with the conditions of early growth.

Strong assertions have been made regarding the connexion of phthisis with indigestion. My impression is, that such opinions have been too strongly expressed. It is true that persons of consumptive constitution often have a restricted appetite, and take little at a time, although a certain degree of hunger may quickly return. They are not in general good feeders. They are not amongst those who "unbutton after supper, drink old sack, and lie on benches in the afternoon." Sometimes you find them affected with a particular kind of indigestion recurring from time to time, without any appreciable dependence on irregularities of diet, or other ordinary causes, and perhaps attributable to the deteriorated condition of the blood with which the stomach is supplied, and the consequent inability of that organ healthily to perform its functions; but even this variety of indigestion is scarcely common, and it is probable that the various symptoms of disordered stomach are more frequent in the miscellaneous patients of general hospitals, than in those who are the subjects of phthisis. I am more inclined to think that the originating elements of phthisis are first apparent in the mesenteric glands, where a disturbed and hurried function, a condition short of that which induces

obvious scrofula or enlargement, occasions an imperfect performance of their part in the elaboration of healthy blood. For clearer views on this important subject, our hopes must be directed to microscopical investigation. The hurried kind of action which seems associated with the development of phthisis may, in constitutions prone to tuberculosis, exhibit itself early in other ways, and be manifested in those organs whose growth at any particular period is most rapid. Prior to the time when the lungs are most actively engaged, there is what may be called the cerebral era, when the growth of brain is specially rapid. At this period persons who, if they lived to the pulmonary era, would probably become consumptive, are apt to fall victims to tubercular meningitis. The phenomena observable in such subjects are consistent with the evidences which we have described of hasty, abortive growth, as characterizing tubercular affection. Precocity, terminated by hydrocephalus, is in such instances common. It is amongst such we find individuals pale and prematurely wise, exhaling like the early dew before the morning sun.

At a later period, other significant evidences of a similar condition may be observed. Amongst individuals thus affected, I have found many remarkable for intellectual activity, ready memory, quick perceptions, alert emotions, sensitiveness of sympathy, poetical temperament; they can work early in the morning; they are not easily fatigued by intellectual exertion; they engage energetically in the ambitious pursuits of life. A young gentleman, full of ardour, working day and night on some animating object of study, was told he ought to rest. He replied he did not need rest; that he never had the headache, and was never tired. He was told he ought to be tired by such exertions, and that not to be fatigued by them was morbid. He disregarded the admonition. Shortly afterwards he had hemoptysis. Other indications of mischief in the lungs appeared. In a few months he died of consumption.

It is my impression that there is often an interchangeable relation between insanity and phthisis. I have known early symptoms of consumption subside, the friends of the patient disregarding medical admonition, and imagining the physician to have made an incorrect diagnosis. Some eccentricity of mind has appeared. As the chest seemed to recover, the brain became obviously affected, and the patient has become an inmate of a lunatic asylum.

I am convinced that there are many individuals of the consumptive diathesis in whom external circumstances alone determine which organ shall be most involved in the morbid condition. A person thus constituted, under the influence of a depressing life and confined air, will become consumptive: impelled by the stimulus of inordinate ambition, overworked in any one direction of intellectual exertion, he will become insane. Under favourable circumstances of prosperous, well-regulated activity, he may attain the consolidation of mature life, and escape either catastrophe.

But the blood itself, when minutely examined, may perhaps exhibit evidence of accelerated action. If any of us were to run for a few minutes, and then, pricking his finger, submit the blood to examination under the microscope, the discs, instead of retaining for a quarter of an hour or more their proper outline, would probably, in a few minutes, assume a strawberry form, or become stelliform, serrated, or corrugated. A similar change is often rapidly apparent in the blood of the phthisical, especially in the cases which are proceeding badly. My observations have not been sufficiently repeated on this subject to authorise my offering the statement positively, or presuming to assert that the rapidity with which this phenomenon presents itself, may fairly be regarded as of moment in the way of diagnosis; but irrespective of this suggestion, considerable evidence has been afforded that, in the consumptive constitution, there is a change of material and a change of action; and indications have been presented of a course of inquiry, which promises to be most fertile in elucidating the nature of the changes associated with the consumptive organization. With so many active minds engaged in the investigation, we may hope for speedy accessions to our knowledge; but there is much to learn. We know something of the *materials* of our frame—not much of the conditions by which they are regulated. The text of my former lecture—"Maximè in minimis"—requires to be illustrated by a clearer light. The most minute in form is regulated by laws sublime, but unknown. We can recognise the shape of living organisms, but as yet we cannot explain the forces by which they are determined.—*Lancet, July* 22, 1854, *p.* 45.

[In the palliative treatment of phthisis various modifications have lately taken place.]

In the treatment of *night perspirations*, sulphuric acid was formerly the remedy most commonly employed, and with very partial success. Other acids, such as the gallic and the acetic, are probably more effectual for the purpose. Considerable abatement of the symptoms may often be derived from the use of a night-dress dipped in sea-water or a solution of salt, and dried; but a most important improvement in the treatment of this symptom is the administration of oxide of zinc at bedtime, in doses of about four grains, combined with any anodyne extract, such as henbane or hemlock. This property of the oxide was first observed by Dr. Robert Dickson. The mode of action of the remedy is undetermined, but the relief induced by its administration is more decided than from any other medicine with which I am conversant.

One of the most trying of the complications of phthisis is *diarrhœa*. It is not my present intention to attempt a description of the various modifications of this condition, but a few practical remarks on the subject may not be inappropriate. When diarrhœa is associated with intestinal ulceration, or with an appearance of the tongue and other circumstances indicating irritation of the mucous membrane, the diet,

nothwithstanding the existence of debility, must be bland and unstimulating. Instances dependent on a relaxed state of the intestinal exhalants may require astringents. The peculiarities of the individual case must determine whether we select the preparations of silver copper, or lead. My experience, however, during the last six years, has confirmed my impression, that of all the remedies which have been recommended for this affection, there is none more generally available than trisnitrate of bismuth. This medicine, combined with a little gum and magnesia, and when necessary with Dover's powder, perseveringly employed, usually affects the object more permanently than other measures, and without inducing any opposite or collateral evils.

The variety of remedies employed for the relief of *cough* serves to show how intractable this symptom often proves; and I think we may assert that, till within a few years, sooner or later, opium, in some one of its many preparations, has usually become the chief reliance of the practitioner in its treatment. I rarely meet with instances where the inhalation of chloroform, combined with three times the quantity of sprits of wine, fails to relieve; but there are objections to the indiscriminate use of so powerful a measure. Often the inhalation of camphorated spirits is equally effectual; sometimes the vapour of warm water, or infusion of hops. The simple expedient of swallowing a little oil slowly often gives more relief than the use of what are called intentional medicines. In some irritable conditions, tincture of aconite in doses of four minims, is worth the trial. When expectoration is profuse, creasote, pyroacetic spirit, infusion of pitch, or balsam of Tolu, may be administered; but of all the remedies referable to this class, appropriate for cases accompanied with profuse expectoration, not one has proved in my hands so efficient as petroleum, or Barbadoes tar, the cough being frequently relieved, and the expectoration rapidly moderated, under its use.

On the treatment of *hæmoptysis* I need not dwell. Single doses of mercury, and a few saline aperients; antimony, even bleeding, may, in special cases, be requisite. Direct astringents, such as gallic acid and acetate of lead, may occasionally be required. In a larger proportion of cases, turpentine is the most satisfactory remedy, but not unfrequently it is inexpedient to attempt the sudden arrest of hæmoptysis, since, when moderate, it is rather useful than dangerous. Such are a few simple hints which I would venture to offer as derived from my own observations of the treatment of individual symptoms. It is not my present object to give an elaborate essay on the treatment of phthisis, but rather to confine my remarks to the statement of opinions either formed or confirmed by my special opportunities for investigation. I feel that a detailed review of the subject would scarcely harmonize with the broad principles which it was the object of preceeding lectures to illustrate. The symptoms thus briefly noticed are but incidental evils springing from that error of the organism which I formerly described as exhibiting itself locally in faulty cell-formation,

generally in defective blood, and disturbed, imperfect, hurried action. No satisfactory or systematic view can be presented on the subject of treatment without regard to the different degrees of progress of the morbid action.

The disease may be only threatened. Rapid growth, some approach to the phthisical physiognomy, a pearly or somewhat coloured margin to the gums, observed in a member of a consumptive family, although not considered an invalid, may be the chief indications of the impending disease. In such instances well-arranged exercise, especially of the arms, as in fencing or archery, the adoption of judicious plans of education, and the appropriate choice of climate or employment, may often avert decided mischief.

But supposing local pulmonary disease to be commencing, as evinced by a disposition to chilliness; a feeling of oppression under the sternum; gnawing sensations about the scapula; effort in making a thorough expiration; prolonged expiratory murmur; hæmoptysis; expectoration resembling isinglass in appearance; a pulse evincing the characteristics formerly described.—Congestion should then be obviated. A dose of blue-pill, followed by an aperient, may be administered. Sometimes the application of a few leeches applied over the threatened part, and the administration of liquor potassæ with infusion of cascarilla, may be advantageous.

But softening may occur, the second stage may be established, with the clicking, or "humid crepitation," as an auscultatory sign, expectoration exhibiting, perhaps, elastic tissue under the microscope, as well as characteristic cells of tubercular character. The treatment must then be cautious, unstimulating, but strengthening, exposure to cold or heat must be shunned; change to a tropical climate is now dangerous, and even the excitement of sea-air may do harm.

When the third stage is established, indicated by gurgling or amphoric respiration or cough, we have to adopt such treatment as shall strengthen the constitution of the patient, so as to become tolerant of the local disorganization, reparation of which can be expected only under very favourable circumstances and assiduous care.

Such general statements as those which I have offered will not, however, satisfy minds anxious to make a distinct and decided step in the treatment of this fatal disease. Do the modern acquisitions furnished by pathology, zoo-chemistry, and histology, assist us in establishing any principle calculated to determine the appropriate treatment? The chemical condition of the blood of the consumptive patient is, in some respects, analogous to that characterizing chlorosis; but it is not the true olichæmia of that disease, and iron will not cure, although it may often be beneficial as an auxiliary.

We have described the deviation from the natural condition in the process of cell-formation as the earliest local manifestation of phthisis. Will our knowledge in this respect assist our decision? Fatty degeneration, terbucular degeneration, and cancerous disease, in their cellular

relations, may be contrasted. Cancer-cells as compared with phthisical, having, perhaps, more of albumen and less of fat, but the nature of the action is more important than the attendant chemical conditions. In fatty degeneration, we have life failing; in tubercle, running out by undue rapidity; in cancer, running riot.

Is there any kind of treatment calculated to moderate this undue action, and at the same time give tone? I have lately tried the influence of digitalis. The effect of this remedy in lowering the pulse is well known; but I have been interested to observe that the rule obeyed by the phthisical pulse is no longer strictly applicable when the sedative influence of digitalis has been produced on the heart. If the anomaly of pulse formerly described depends on the presence of the tubercular element in the blood, the restored susceptibility to change of posture might seem to imply that some effect is produced on the tubercular disease. It is worthy of note that some of the most able physicians of the last century attached great importance to the use of digitalis in pulmonary affections. Dr. Ferriar's remarks on the subject evince an honesty and intelligence which entitle them to our respect. "Digitalis," he observes, "has often quieted the pulse, relieved the cough, and given the patient feelings of recovery." He adds, "the patient's ultimate recovery is not to be confidently expected, even when the pulse is reduced in velocity, and the symptoms are evidently mitigated by the action of the medicine. Many disappointments have taught me not to be elated by one or two instances of success, and I should deceive the public if I presented to them only examples of fortunate practice. To cure (such disorganization as we sometimes observe after death) would require an effort of the power which first created the living body."

It would be unreasonable to disregard the assertion made by so cautious and trustworthy a physician, that, after seven years of careful experiment (from 1792 to 1799) he had come to the conclusion that digitalis, with iron for the scrofulous phthisis, with opium for the florid, enabled him often to hope for a cure under circumstances which would formerly have precluded all hope of recovery. On the whole, we may venture to suggest that the endermic introduction of digitalis, by means of a blistered surface, may occasionally prove worth the trial, as an auxiliary measure, at the commencement of some cases of consumption.

The importance of careful and discriminating attention to the peculiarities of each individual constitution must not be overlooked; still there is one medicine so safe, and, in a large proportion of cases, so useful, that I shall be excused for giving it a prominent consideration in the remainder of the lecture. Perhaps there is no substance, the value of which has been in a short time established by so large an accumulation of evidence, as cod-liver oil. About ten years since, in my office as one of the Fothergillian adjudicators, some remarks in one of the competing essays, regarding the efficacy of this remedy in scrofula, in-

duced me to try the medicine in consumption. As far as I am aware, the earliest extensive trial of cod-liver oil in London was made by me at the London department of the Hospital for Consumption, and the results of that investigation were detailed to this society, the coarse kind, such as is used in tanning leather, being employed. Of the first thirty-seven patients, ten were greatly benefited, and increased materially in plumpness and strength; twelve were slightly improved; twelve remained unchanged; and three were obliged to discontinue the remedy, on account of the nausea which it occasioned. Under the use of this oil all the symptoms were ameliorated; the pulse became slower, the cough and expectoration lessened, the night perspirations abated, diarrhœa ceased, and the urine often ceased to exhibit the excess of uric acid. The diminished liability to hectic in patients thus treated furnished remarkable evidence that this variety of fever has more relation to conditions of blood than to local disorganization. It is obviously a question of great practical interest, whether cod-liver oil owes its efficacy to some ingredient not present in other oils. With a view to determine this question I tried various other oils, such as sperm and seal, and the result was a conviction that fish oils generally resembled one another in their remedial properties, although differing in their aptitude for digestive assimilation in the human stomach. It seemed to me an object of interest to determine whether other animal oils not derived from the liver possessed similar powers; and in the year 1849 I made many experiments in the use of neat's-foot oil. Of the first fourteen patients to whom I administered the substance, seven were essentially benefited, (in three the disease was arrested); in five there was no obvious improvement; only two lost ground. The oil of neat's-foot, therefore, can fairly be compared with that of cod's liver, although, being equally disagreeable to the palate of most patients, it is not likely to come into general use. Dr. Radcliffe Hall, of Torquay, having incidently heard of this remedy, gave it a trial, and published a favourable account of the effects in the Monthly Journal for July 1852. This physician, not having seen the description of my experiments, his statements furnish an independent confirmation of my conclusions. Neat's-foot oil would appear to be adapted to some cases in which there is too much irritation of the intestinal mucous membrane to bear the administration of the cod-liver oil.

I have also tried an animal oil obtained from a soft, solid fat, found between the parchment and the leather skin of animals. The most remarkable properties of this oil are, its very slight tendency to become rancid, and its freedom from drying properties. It seemed not unreasonable to expect that it might prove as efficacious as neat's-foot oil; but as yet I have not been able to trace any important advantages to its use. I have tried an oil obtained from a species of fish abounding on the Malabar coast, and frequently with encouraging results. The inefficiency of almond and olive oil, excepting when combined with

phosphorus, I have already reported. The result of these trials at first induced me to distrust vegetable oils in general; but happening eighteen months since to have a patient engaged in a cocoa-nut manufactory, it occurred to me to try the oil of this nut, which, from the nutritious qualities of the kernel, and the peculiar properties of the soap obtained from the oil, seemed worthy of special consideration. In the first instance, I tried the common oil—sometimes the solid, sometimes the fluid part. Subsequently, I have used a purified oil, (of which I show you a specimen,) which is obtained by pressure from crude cocoa-nut oil, as expressed in Ceylon and the Malabar coast from the copperah, or dried cocoa-nut kernel, and refined by being treated with an alkali, which deprives it of its unpleasant smell and taste. It is then repeatedly washed in distilled water, in order to separate any of the saponaceous compound formed by the combination of the alkali with the impurities and rancid matter of the oil. It burns with a feeble blue flame, and is undrying. For the supply of this oil, and for much valuable aid in my investigations, I am indebted to Mr. George Wilson, of Messrs. Price and Company's establishment. Mr. Wilson has given to my suggestions the ready attention of an enlightened mind, and I am happy to bear witness to the value of the sympathy and co-operation which the well-informed laity can often render in our medical endeavours to apply scientific research to purposes of practical usefulness.

Of the first thirty cases of phthisis in which I administered the cocoa-nut oil, nineteen were much improved, five remained without material change, and only six got worse. Of the last twenty-three, fifteen were materially benefited, three remained unchanged, and five became worse. Three of these five were in so hopeless a condition at the time of commencing the remedy, that my clinical assistant thought it scarcely fair to include them in the report. I was careful, for the most part, to avoid the concurrent use of any other medicine; and it is proper to mention, that a large proportion of the patients had previously taken cod-liver oil, and discontinued it, from being disappointed of benefit.

Another which I have tried is that of the sunflower seed. It is slightly drying, and burns with a smoky flame, showing a large proportion of carbon. Although the sunflower seed is much used for feeding and fattening poultry, the oil has not, medicinally, afforded me much satisfaction. I have occasionally alternated it with the animal fat oil. Each of these oils has occasionally done a little good after the failure of the other, but no results have occurred worthy of record.

I felt curious to ascertain whether chemical science could suggest any explanation of the diversity of remedial properties in different oils, and, with this object, obtained from Mr. Dugald Campbell an ultimate analysis, which is subjoined, of some of the oils which I have employed.

Ultimate Analysis of Oils.

	Carbon.	Hydrogen.	Nitrogen.	Oxygen.
Cod-liver oil	80·18	13·72	0·246	5·854
Neat's-foot oil	64·33	12·50	0·064	23·106
Cocoa-nut oil	69·62	12·49	0·060	17.830
Olive oil.....	69·38	13·47	0·058	17·092

It will be observed that cod-liver oil differs materially from the other oils in its elementary composition. The remarkable difference apparent between the proportions of these elements, especially of carbon and oxygen, in cod-liver oil, as contrasted with the other oils, might lead us to suppose that its superiority might thus be explained; but the inadequacy of such an explanation becomes obvious, when we further pursue the inquiry, and observe a close correspondence in elementary composition between olive oil which may be regarded, when introduced into the stomach, as, medically, almost inert, and cocoa-nut oil, which is fairly comparable in efficacy with the oil obtained from the cod.

[The class of remedies for phthisis, it should always be remembered, is that which is also adapted to other states of the system, as anæmia in its various forms of scrofula, neuralgia, hypochondria, hysteria, &c.; and in hereditary taints of the blood, we should, as early in life as possible, introduce oleaginous medicines and food into the system, not forgetting the inunction of the body with oily substances.]—*Lancet, August* 5, 1854, *p.* 97.

Dr. Thompson has found, that during the administration of cod-liver oil to phthisical patients their blood grew richer in red corpuscles, and he refers to a previous observation of Dr. Franz Simon to the same effect. The use of almond-oil and of olive-oil was not followed by any remedial effect; but from cocoa-nut oil, results were obtained almost as decided as from the oil of the liver of the cod, and the author believes it may turn out to be a useful substitute. The oil employed was a pure cocoa oleine, obtained by pressure from the crude cocoa-nut oil, as expressed in Ceylon and the Malabar coast from the copperah or dried cocoa-nut kernel, and refined by being treated with an alkali, and then repeatedly washed with distilled water. It burns with a faint blue flame, showing a comparatively small proportion of carbon, and is undrying. The analysis of the blood was conducted by Mr. Dugald Campbell. The whole quantity abstracted having been weighed, the coagulum was drained on bibulous paper for four or five hours, weighed, and divided into two portions. One portion was weighed, and then dried in a water-oven, to determine the water. The other was macerated in cold water, until it became colourless, then moderately dried, and digested with ether and alcohol, to remove fat; and, finally, dried completely, and weighed

as fibrin. From the respective weights of the fibrin. and the dry clot, that of the corpuscles was calculated. The following were the results observed in seven different individuals affected with phthisis in different stages of advancement:

		Red corpuscles.	Fibrin.
First stage before the use of cod-liver oil ...	Female	129·26	4·52
	Male	116·53	13·57
First stage, after the use of cod-liver oil ...	Female	136·47	5·00
	Male	141·53	4·70
Third stage, after the use of cod-liver oil ...	Male	138·74	2·23
Third stage, after the use of cocoa-nut oil ...	Male	139·95	2·31
	Male	144·94	4·61

Med. Times and Gazette, June 10, 1854, *p.* 607.

16.—*Night-sweats in Phthisis.*—[Mr. Hutchinson, of the City Hospital for Chest Diseases, shows that night-sweats in this disease may be checked with impunity and even benefit.]

Under the usual treatment of phthisis, (full diet, cod-liver oil, and tonics,) the tendency to night perspiration often ceases spontaneously. If it become desirable to expedite the process, it may be done by the sesquichloride of iron, the mineral acids, or, best of all, by the gallic acid. The following is the prescription for a night-draught containing the latter:—

℞. Acidi gallici gr. vij.; morph. acet. gr. $\frac{1}{8}$; alcohol q. s. (a few drops;) syr. tolutan. ℥ss.; aquæ ℥j.

The night-pill, as we find it in the Pharmacopœia of the Brompton Hospital for Consumption, is—

℞. Acid. gallic. gr. v.; morph. hydrochl. g. $\frac{1}{8}$; mist. acac. q. s. Ft. pil. ij.

It is also of advantage to adopt an astringent regimen as far as convenient. The patient should be directed to sleep on a mattress, alone, and not heavily clothed; he should wear no flannel in bed; as dry a diet should be taken as conveniently can be borne, and fluid should be especially avoided in the latter half of the day, none whatever being allowed later than several hours before bed-time.—*Med. Times and Gazette, June* 10, 1854, *p.* 594.

17.—*An Example of the Concurrent Development of Cancer and Tubercle.* By Septimus Wm. Sibley, Esq., Registrar to the Middlesex Hospital.—[There has been a good deal of interest excited of late by the opinion that cancer and tubercle could not co-exist in the same subject at the same time. We have seen several cases reported which made this opinion doubtful, but the following seems conclusive. It may, however, be true, generally, that tubercle and cancer do not co-exist, but it is evident that there are exceptions.]

This was the case of a woman, aged 48, admitted into the Middlesex Hospital, with a sloughing cancerous sore in the left breast; there was a hard tumour on the inner side of the size of an orange, and several small nodules of cancer at its edges. In the course of five days after her admission nearly the whole of the remaining portion of the tumour sloughed away, leaving a clean-looking surface, which immediately began to cicatrize. Subsequently, pulmonary symptoms became developed, profuse expectoration followed, and she sank and died three months after her admission. On making a section of the structure of the left breast, it was seen to be an extremely dense form of infiltrating scirrhus, traces of breast tissue, such as ducts, being very apparent. In the thorax, large masses of tuberculous lung tissue was observed. Tubercular cavities existed in the apices of both lungs; a part of the lower lobe of the right lung was in a state of grey hepatization, and the bronchial tubes were thickened and dilated. In the left pleura were numerous crude tubercles. On examining the dates of this case, positive proof was obtained that a cancerous tumour was increasing in the breast simultaneously with the increasing of tubercular disease of the lungs, and that for a period of at least six weeks. The author thought that a single instance of the concurrent existence of these diseases was sufficient to destroy the doctrine of the absolute incompatibility of tubercle and cancer with each other.—*Lancet, July* 8, 1854, *p.* 10.

18.—ON PLEURO-PNEUMONIA.

By Dr. R. B. Todd, F.R.S., Physician to King's College Hospital.

[We give the following remarks of Dr. Todd as being very interesting in shewing the peculiar symptoms which are sometimes observed in the urine in cases of pneumonia and pleuritis. The expectoration also is worthy of more notice than is generally given to it. When the expectoration is viscid, of a rusty-red hue, adhering firmly to the vessel, we have *sthenic* pneumonia. In the less sthenic, or in the typhoid pneumonia, there will be either no sputa at all, or they will be less viscid, less adherent, and the colour will be *much darker*, somewhat like *prune-juice*. The case which Dr. Todd comments upon was one of pleurisy, accompanied with pneumonia and consolidation of a portion of lung.]

The treatment pursued was of the simplest kind; turpentine stupes were ordered to be applied to the affected part of the chest three times a-day, and half an ounce of the liquor ammoniæ acetatis was given every two hours; beef-tea and milk were allowed as diet. This plan you have now seen me follow in many cases with decided success. Bleeding and all kinds of depletion have been carefully avoided. The bowels have been moderately acted upon; but we have been anxious rather to avoid pulling down the patient, the influence of the morbid process being quite enough for that purpose. A principal object of the treatment, as regards physiological effect, was to procure sweating, and

to promote the free action of the kidneys. Large doses (from four to six drachms) of liquor ammoniæ acetatis, given at short intervals, almost always operate beneficially in these ways. The cases which we find do not do so well, on this plan, are those in which a large portion of one or both lungs is affected; but these do not get on better under any other plan that I have yet seen adopted, and certainly an antiphlogistic course (so called) is not by any means more successful. When only half or a third of one lung is affected, the patients do very well on the plan I have just referred to.

I have said, that we avoid pulling down our patients—not only so, but, on the other hand, we endeavour to uphold his strength, by giving him, at short intervals, moderate quantities of nourishment, such as his stomach may easily digest; and, if signs of exhaustion or debility show themselves, we often add to these brandy or wine, in small quantities likewise, and carefully adjusted to the patients' digestive organs.

In this treatment of pneumonia no attempt is made to cut short the disease. It is founded upon the observation of the way in which the disease is often spontaneously cured, through critical evacuations of sweat or urine, or of both, and consists in an attempt to promote both these secretions. I am not, indeed, aware of any mode of treatment which can be said to cut short the disease; the plan by bleeding and tartar emetic does not do so certainly. I have heard it stated, that large doses of digitalis will sometimes cut short the pneumonia. Digitalis is an uncertain drug, not always possessing an equal amount of power, and sometimes not very controllable. Moreover, there are certain idiosyncracies which do not bear the use of digitalis; nevertheless, it is not undeserving of trial in cases chosen with judgment. I hold, that if the treatment is of a simple kind, and at the same time efficient, we cannot wish for more; and I believe we do more good in pursuing such a plan of treatment, than in endeavouring to cut short the disease by remedies whose action is at most uncertain, but which may under certain circumstances actually do harm. By following the plan I have just mentioned, if the patient dies it will be rather from a negation of treatment than from any other cause. The treatment will prove unsuccessful simply because the disease went on unchecked by it, and in such cases it is often a question if, by any known plan of treatment, such a result could have been averted.

Let me allude to a very interesting point which has been noticed in these cases of pneumonia. It may now be looked upon as an established fact, that in this disease there is either a great diminution in quantity of the chlorides in the urine, or these salts are altogether absent from that fluid. Upon following up this subject, Dr. Beale has made out, that while there is a deficiency of the salt in the urine there is a corresponding excess in the fluid poured out into the lung; in fact, that the chloride appears to be drawn from different parts of the system to the inflamed lung.

The amount of chloride in the urine gradually diminishes up to the period of hepatisation, at which time, in the majority of cases, not a trace is to be detected. As soon as resolution commences, the chloride gradually re-appears until the normal quantity is found. Now, the method of testing for the presence of this chloride is so simple that you should always ascertain for yourselves the accuracy of this statement wherever an opportunity occurs. All you have to do is to add a few drops of nitric acid to a portion of the urine in a test-tube, and then a few drops of a solution of nitrate of silver. If chloride be present, a dense white precipitate of chloride of silver, which is insoluble in acids, will fall. If chloride of sodium be altogether absent, no precipitate whatever will occur.

What appears somewhat contradictory of the above statement is, that on the 11th we tested this boy's urine, and found evidence of the presence of much chloride; but on the 12th there was a diminution and on the 14th the quantity had again increased; so that in this case there was no total absence at any period; and from this circumstance alone we might infer that the hepatisation of the lung was not very extensive. The disease began as pleurisy, and when hepatisation took place, the chloride in the urine diminished in quantity. I may contrast this with the case of Mary Coley, which was one of simple pleurisy of an acute form. The rubbing sound was very loud and well-marked. She was treated with opium and large doses of liquor ammoniæ acetatis, and recovered rapidly. At no period of the case did we find any diminution of the quantity of chlorides in this patient's urine. In this case of pleurisy, then, the chlorides in the urine did not appear to be affected, while in pneumonia the quantity of these salts is observed to undergo a marked diminution. At present, however, we must not generalize too quickly on these interesting points. —*Med. Times and Gazette, July* 15, 1854, *p.* 51.

19.—ON HOOPING COUGH.

By Dr. George D. Gibb.

[Dr. Gibb sums up his views of the nature and seat of hooping cough as follows:—]

1. Toxication of the blood, produced by some unknown specific influence, peculiar in its nature, not unlike that of measles and scarlet fever, in the circumstance of its affecting persons once during their lives, generally children under five years of age.

2. Irritation of the terminal loops of the nerves supplying the mucous membrane of the bronchial tubes, producing vascularity and consequent secretion of a greater or lesser quantity of mucus.

3. Reflex action of the pneumogastric and respiratory nerves, followed by congestion of the vessels of the medulla oblongata and pia mater surrounding it, and also at the origins of its nerves.

4. Spasmodic contraction of the circular and longitudinal muscular

fibres of the bronchi, consequent upon the foregoing, manifesting itself in the series of sudden expiratory efforts, and the well-known sonorous back-draught or hoop.

5. The immediate result of which is frequent and rapid respiration to compensate for its temporary absence, producing a highly oxygenated or super-oxidized state of the blood, with a tendency to the formation of fibrinous concretions in the heart during the spasms.

6. As a secondary result of the spasmodic muscular contraction of the bronchi, we have a temporary hypertrophy of the muscular fibres thus acted upon, which disappears again after the cure is established.

7. The disease is at first irritative and catarrhal, and afterwards nervous and spasmodic, both due to the unknown peculiar exciting cause present in the blood.

8. It manifests the peculiarity of running a special course through its different stages, three in number, which may be cut short, or greatly diminished by medicinal treatment.

[Dr. Gibb next brings forward his remedy, which he considers nitric acid to be.]

It would be presumption in me to say that this substance has been discovered, but in its effects upon the disease, *nitric acid*, in whatever manner administered, not only arrests the paroxysms, and removes the hoop, but shortens the disease almost as effectually as quinine does intermittent fever.

It not only produces a powerful antispasmodic effect, but an equally tonic influence, and supplies to the blood an element—nitrogen—which removes or neutralizes the excess of fibrin existing in that fluid —one of the dangerous elements of the disease—and so destroys the poisonous principle combined with it, which is the primary cause of the affection.

If this remedy cures pertussis, it differs from the great majority of others in the fact that its action in the economy can be explained upon rational grounds.

Nitric acid possesses antiseptic properties in a high degree, and probably the influence of these assist materially in the cure by acting directly on the blood, as well as supplying its nitrogen, and prevents the too rapid generation of the fibrin from the albumen.

The nitrogen acts also as a sedative, in diminishing the stimulating effect of the oxygen so rapidly absorbed, and as an antispasmodic in allaying irritation, and therefore lessening the severity of the paroxysms. If hydrocyanic acid is useful in many cases, it is as much owing to its nitrogen as the sedative and antispasmodic properties which it possesses.

The presence of the excess of fibrin has been elsewhere explained to depend upon the frequent inspirations, immediately after the parox-

ysms have ceased: it may also be influenced by the peculiar poison itself which has contaminated the blood. Whatever remedy will check this tendency materially assists in the cure; it is in this manner that ether and chloroform act by arresting the process of sanguineous super-oxidation, and, with the other properties possessed by those agents, equally assist in the cure.

As a general tonic, nitric acid possesses the advantages in pertussis of rapidly allaying the dyspepsia, which is sometimes accompanied with sickness and irritability of the stomach; it restores the healthy state of the mucous membrane of the bronchi, it arrests the spasm, diminishes the cough, and finally dispels the hoop altogether.

Dr. Arnoldi and myself have never met with any ill effects from its use, and all the cases treated by it were carried to a successful issue, the cure in all being very speedy, with few exceptions, and the disease being at the same time abridged in the length of its ordinary duration. So far as experience has shown, relapses after cure are very rare indeed.

Should inflammation of the lungs or abdominal organs have set in previous to its employment, it must be avoided, and the treatment must be adopted as recommended for those complications in the next chapter.

But if we have reason to fear congestion of the brain or convulsions, the acid may still be safely given, and with good results, for the purpose of lessening the paroxysms. It will also prove useful in the remittent fever, combined with other substances, if there be no existing irritation.

The details of a few cases only will now be given to illustrate the successful effects of this remedy, as all possess a similarity in their general features.

My friend Dr. Arnoldi has treated upwards of one hundred cases of pertussis with nitric acid, with the most satisfactory results; and since I commenced its use, sixty-seven cases were cured at intervals varying from two to fifteen days, but averaging between six and seven days.

It may be as well to mention here that the object entertained by Dr. Arnoldi, in using this acid as a remedy in pertussis, was to introduce the elements of the atmosphere into the blood by the process of gastric digestion, so as to enable the lungs to outstand the stage of temporary asphyxia, which always is induced during a severe paroxysm. Whether the theory be correct or not, the result, he says, of his practice has been almost universally successful.

I think it not improbable that the greater portion of the oxygen is chemically appropriated before the blood becomes sensibly relieved by the nitrogen; because if it were not so, a still greater amount of fibrin would be formed, and a tendency to aggravation, by inflammatory complication would be the result.—*Lancet, Aug.* 12, 1854, *p.* 125.

DISEASES OF THE ORGANS OF CIRCULATION.

20.—ON CHRONIC HEART DISEASE.

By Dr. Alexander Harvey, Physician to the Aberdeen Royal Infirmary, &c.

In the following notes, an attempt is made to exhibit, within as small a compass as possible, and in a form approaching the tabular, the leading facts connected with the pathology, diagnosis, and prognosis, of the more common organic affections of the heart. Imperfect as the notes are, the author is not without hope that they may be of service to some of his colleagues in the Association, who, though familiar with the subject of heart-disease, may not always be able at once or readily to call to mind such particulars respecting it as they must often have occasion for in the course of their practice, and which they may not always have time or opportunity to collect from larger treatises.

It may be added, that the notes were originally drawn up for the students attending the author's class, and delivered to them as a recapitulation of the facts just previously detailed at greater length in the lectures; and that the materials of them are chiefly taken from Dr. Watson's 'Lectures' and Dr. Allison's 'Outlines of Pathology and Practice of Medicine,' the works used in the class as text-books.

I. DISEASE OF VALVES AND ORIFICES.

I. The valves and orifices of the left side of the heart are at least twenty times more liable to disease than the valves and orifices of the right side.

Disease of the semilunar pulmonary valves is so rare as to be matter of pathological interest merely. Disease of the tricuspid valves is more frequently, although still seldom, met with; and still seldomer without coexisting disease of either the aortic or mitral valves.

II. In early life and in women, the mitral valve and corresponding auriculo-ventricular orifice are oftenest diseased; in advanced life and in men, the aortic. In many cases, at all ages and in both sexes, the two sets of valves and openings are simultaneously diseased.

III. The diseased states of the valves and orifices are mostly the result of (*a*) antecedent endocarditis of rheumatic origin, and consist of concretions forming on the valves; or (*b*) mere perversion of nutrition, independent of inflammation, and occurring in connexion with atheromatous and other kinds of deposit in the aorta and arteries generally.

IV. The effects of these changes on the functions of the valves and orifices are two-fold:—

1. By contracting and narrowing the orifice, to impede or obstruct the passage of the blood *(valvular obstruction, obstructive disease of valves.)*

2. By thickening, corrugating, and shortening the valves, to make

the orifice more or less permanently patent, and allow regurgitation or reflux of blood *(valvular insufficiency, valvular patency, regurgitant disease of valves.)*

v. Valvular obstruction and valvular insufficiency often exist separately, but are oftener coexistent in the same valve. Each of them may obtain in very different degrees, and the two may be very variously combined.

vi. In a very few cases, the cause of patency is preternatural widening of the orifice without disease, but with no adequate extension by growth, of the valves; and, in a few others, it is owing to disease with shortening of the chordæ tendineæ, the valves themselves being sound.

II. DISEASE OF WALLS AND CAVITIES *(Hypertrophy and Dilatation.)*

i. Hypertrophy and dilatation may be either partial or general, oftenest partial. Dilatation, unaccompanied by hypertrophy, is rare.

ii. Hypertrophy and dilatation are very generally *secondary* morbid states. They may be produced by various causes:—

1. In a very few cases, by unknown causes, or causes unconnected with obvious change of structure elsewhere *(primary)*.

2. By adhesion of the pericardium to the heart, consequent on plastic exudation from pericarditis.

3. By preternatural widening, with or without change of structure, of the ascending aorta.

4. By diseased states of the valves. This is the most common cause.

iii. The *rationale* of their production may be thus stated:—

1. Disease of the valves, widening of the aorta, adhesion of the pericardium, create a demand for increased action of the heart; and this increased action, in a constitution otherwise healthy, leads to increased nutrition of the organ. The walls of the heart are thereby gradually increased in bulk and in contractile power *(simple hypertrophy)*.

2. When, along with this increased action, there is (*a*) a full quantity of blood in the body, the cavities of the heart are gradually dilated at the same time that their walls are thickened (*hypertrophy with dilatation, eccentric hypertrophy*). But (*b*) when the quantity of circulating blood is much diminished, the tonic contraction of the thickened fibres of the heart, which are no longer distended, leads to a diminution in the size of its cavities *(concentric hypertrophy)*. This is rarely met with, except either as a congenital affection, or, in connexion with the *rigor mortis*, as a temporary *post mortem* condition.

3. Dilatation without hypertrophy, consequent on obstructive disease of the valves, occurs chiefly (*a*) in a weakly habit of body, when the excitement of the heart by the preternatural amount of its stimulus is feeble; but (*b*) it may be produced, in a habit otherwise

healthy, by mere morbid debility of the muscular fibres of the heart, as after some cases of rheumatism affecting them.

IV. In the great majority of cases it is the left ventricle that is first and chiefly affected, and hypertrophy and dilatation combined (eccentric hypertrophy) that obtains, and in connexion with pre-existing mitral or aortic disease. With mitral disease, there is commonly rounding of the apex, and often simple hypertrophy merely; with aortic disease, there is elongation of the apex, and commonly eccentric hypertrophy.

Pure dilatation may affect either ventricle, oftenest perhaps the right, and that chiefly in females, and in such cases seems to occur in connexion rather with disease of lung (*e.g.*, habitual asthma) than with diseased valves.

III. DIAGNOSIS OF CHRONIC HEART DISEASE.

Diagnosis of Disease of Valves and Orifices. Practically, in at least nineteen out of twenty cases, the questions to be determined are, whether it be the mitral or aortic valve that is diseased, or both; and whether the disease be of the nature of valvular obstruction, or of valvular insufficiency, or both. The diagnosis is mainly founded on these two things: first, a bruit or murmur heard, called, from its blowing character, *bellows murmur*, or, from its seat being within the heart, *endocardial* murmur; and secondly, the state and character of the pulse at the wrist.

I. *Bruit or murmur.* Its import varies according (*a*) to the time when it is heard, (*b*) the place where it is best heard, and (*c*) the direction in which it is conveyed furthest. The second and third may be taken together, and included under one head.

(*a*) *The time when it is heard.* This may be either with (or rather in place of) the first natural sound (systolic bruit); blood then passing from the left ventricle into either the aorta before, or the auricle behind: or with the second natural sound (diastolic bruit); blood then passing into the ventricle, from either the aorta before, or the auricle behind.

(*b*) *The place and direction in which it is best heard and conveyed furthest.* This may be either over the base of the heart, and thence upwards along the aorta and carotids, or at and in the direction of the apex. Accordingly—

1. Bruit, systolic and loudest at base, indicates obstructive disease of the aortic valves or orifice.

2. Bruit, systolic and loudest at apex, indicates mitral insufficiency (patency) with regurgitation.

3. Bruit, diastolic and loudest at base, indicates aortic insufficiency with regurgitation.

4. Bruit, diastolic and loudest at apex, indicates mitral obstruction. Rarely if ever heard.

*** Various combinations of these murmurs are sometimes heard, constituting double bruits. Their import is to be gathered from that

of the single murmurs. Thus, *e.g.*, there may be a systolic bruit, equally loud at the base and at the apex, indicating at once aortic obstruction and mitral insufficiency ; or there may be a systolic and a diastolic bruit, both loudest at the base, and indicating aortic obstruction and aortic regurgitation.

II. *The Pulse.*

1. Pulse at wrist irregular, intermittent, unequal, and soft, small, or weak, indicates mitral disease, obstructive or regurgitant, particularly the latter, on which this condition of the pulse is specially dependent.

2. Pulse regular, full, or hard, indicates aortic disease ; if jerking and resilient, aortic insufficiency (with hypertrophy).

The foregoing (I. and II.) may be thus briefly represented on a card carried in the pocket.

BRUIT : If *systolic* and loudest at
Base=AORTIC *obstruction.*
Apex=MITRAL *insufficiency.*

BRUIT : If *diastolic* and loudest at
Base=AORTIC *insufficiency.*
Apex=MITRAL *obstruction.*

And on the reverse side of card :—

PULSE : If *regular*, Full, or strong, Jerking, resilient } =AORTIC disease.

PULSE : If *irregular*, Intermittent, unequal, Soft, small, weak } =MITRAL disease.

Diagnosis of Disease of Walls and Cavities.

I. Of Hypertrophy.

1. The action of the heart preternaturally, sometimes excessively strong, with corresponding impulse felt on laying the hand or the ear over the præcordial region.

2. The sounds of the heart's action, and especially the first sound, less audible than natural,—obscured and muffled.

II. Of Dilatation.

1. The action of the heart weak, somewhat undulatory, with indistinct impulse.

2. The sounds of the heart's action, and especially the first, preternaturally clear, short, or abrupt.

III. Of Hypertrophy and Dilatation.

With various modifications, as the one or the other condition pre-

dominates, of the abnormal impulse, and the abnormal sounds of the heart's action.

1. The area of the natural dulness on percussion increased, often with squareness of outline of this area.

2. The apex of the heart seen and felt to beat lower down than natural, often as low as the seventh or eighth ribs.

3. The præcordial region in some cases obviously bulging and prominent.

IV. PROGRESS AND RESULTS OF CHRONIC HEART DISEASE.

PROGNOSIS.

I. It is important to discriminate between (*a*) the affection of the heart itself, and (*b*) the secondary affections,—*i.e.*, affections of other parts and organs resulting from it.

(*a.*) As time advances, there occurs a gradual aggravation of the heart affection; an increase of the valvular obstruction or of the valvular insufficiency, or of both; and likewise an increase of the hypertrophy or of the dilatation, or of both.

(*b.*) Sooner or later secondary affections, of various kinds, extrinsic to the heart, supervene, *e.g.*

1. Dyspnœa; bronchitis; pneumonia; pulmonary hemorrhage, with or without pulmonary apoplexy.

2. Enlargement of the liver, or of the liver and spleen; hæmatemesis.

3. Cephalalgia; tinnitus; vertigo; syncope; epilepsy; epistaxis; cerebral hemorrhage; apoplexy; palsy.

4. Dropsical effusion; œdema of face, or of face and hands,—of lungs; hydrothorax; ascites; anasarca or general dropsy.

5. Various combinations and successions of the foregoing.

II. Both the aggravation of the heart disease and the supervention of some secondary affection take place more surely and more quickly, in young and full-blooded individuals, than in those already old, or thin or emaciated.

III. As to the relation that obtains between the secondary affections and the diseased heart—

1. The connecting link between them is the altered (abnormal) condition of the general circulation produced by the state of the heart. This condition may be one or other, or a combination of three kinds (*a*) impeded venous current behind (pulmonic and systemic), as in mitral disease, whether obstructive or regurgitant; or (*b*) undue impulsion of the arterial current in advance, as in hypertrophy; or (*c*) too feeble impulsion, as in purely passive dilatation of the ventricle.

2. Nevertheless, the diseased state of the heart and these effects of it on the general circulation are commonly only *permanent predisposing* causes, not the direct or exciting causes, of those secondary affections,—the immediate causes of them (often in a great measure *avoidable*) being intemperance, over exertion and fatigue, mental emotion, and especially exposure to cold or cold and wet.

3. Some of the secondary affections are themselves the occasion, or concurrent and cooperating causes, of certain other secondary affections, *e.g.* bronchitis—of œdema of the lungs, or of general dropsy; enlargement of the liver, or of the liver and spleen—of ascites, hæmatemesis, epistaxis, apoplexy; or consolidation of lung and enlargement of the liver combined, with bronchitis—of general dropsy.

IV. The worst kind of heart affection is that in which there is at once obstructive and regurgitant disease of the mitral valve, because the most effectual in deranging the general circulation, and the most fruitful therefore of secondary affections. The least unfavourable is a diseased state of the aortic valve only, with moderate hypertrophy of the left venticle; the hypertrophy, though reckoned a diseased state, being, in fact, a provision of nature for overcoming the resistance offered to the exit of the blood.

Insufficiency of the mitral valve, however, with much hypertrophy of the left ventricle, is very hazardous; the hypertrophy in this case enhancing the evil naturally attendant on the patency of the valve.

V. When death ensues, the fatal event may take place suddenly, in the way of syncope, and be directly referrible to the diseased state of the heart; or it may take place more gradually through the medium of some secondary affection, and in very various modes,—in the way of asthenia, or in the way of coma, or in the way of asphyxia,—according to circumstances.

VI. The prognosis in any case must mainly be based upon, and may in general readily be determined from,—

1. The kind and extent of heart affection.

2. The tendency that may appear towards secondary affection; and the kind and extent of this.

3. The age and bodily habit of the patient.

4. The degree to which the habits and circumstances of the patient can be controlled and regulated, and the probable efficacy of the remedies applied, with the view in respect of them all (*a*) of retarding the progress of the heart affection,—(*b*) of warding off secondary affections,—and (*c*) of removing those when they supervene: these several objects furnishing at the same time the main indications of treatment.—*Association Med. Journal, Sept.* 1, 1854, *p.* 785.

DISEASES OF THE ORGANS OF DIGESTION.

21.—ON EPIGASTRIC NEURALGIA.

By Dr. Lees.

[On the *slightest* pressure in the epigastric region great pain is felt in these cases—not occupying a space above the size of a five shilling piece. The following illustrates this kind of case, which might easily be mistaken by the young practitioner:]

He says that he never experiences pain in the stomach, but that, after eating, he has been often obliged to lift his shirt from contact with the epigastrium, as the tenderness caused by even its apposition was intolerable, although it was not aggravated by increasing the pressure. The state of his general health and appetite is good; functions natural; tongue clean; bowels regular; no thirst, nausea, or vomiting. He does not suffer from flatulence, has no headache, but is very low spirited. The circulation is languid, pulse 56; heart's action feeble, but regular, and without any murmur; the abdominal muscles are in a state of constant tension, hard and rigid; there is no evidence of any tumour, nor abnormal pulsation in the epigastric region; neither pain nor tenderness in the back, nor in the course of the intercostal nerves. His easiest posture is on his left side, with the right leg drawn up. When he lies on his back with the right leg extended, the spine is arched, so that the hand can be passed freely under it, but it becomes quite flat and in contact with the bed, on the leg being flexed. The urine is of a natural appearance, sp. gr., and reaction; no visible sediment, but on microscopic examination there are seen numerous very minute crystals of oxalate of lime aggregated in long masses.

He could not assign any cause for his complaint, except that he has been constantly employed in a very dusty meal-room, but he has neither suffered from cough, nor from any difficulty of respiration.

Tincture of aconite was applied over the tender part, but without any relief. I then ordered:—

℞. Infusi valerianæ, infusi cinchonæ, āā ℥iij.

Sumat ℥i. ter in die; a small blister over the part, and to be dressed with acetate of morphiæ ointment, gr. i. ad ℥i.

He was allowed meat every day, and advised to walk about and amuse himself. Under this treatment he rapidly improved, and was nearly quite free from his complaint when I resigned him to the care of Dr Stokes. He, however, unfortunately relapsed, but was cured eventually by continuing the same medicine, and by the repeated application of leeches over the part. If the subject of the above case had been an unmarried female, I should have had little hesitation in regarding it as one of those anomalous forms of hysterical affection occurring in that class of persons; but I confess that at first I felt in doubt as to the cause of this man's sufferings. The superficial seat and character of the pain evidently showed that it was not gastralgia, while the absence of thirst and of fever satisfied me that there was no inflammatory action in the mucous membrane of the stomach. There was no evidence of inflammation in or under the skin, nor in the sheath of the rectus muscle, as occurred in a case under the care of Dr. Neligan, and which presented nearly similar symptoms. My case was examined carefully for aneurism of the abdominal aorta, for disease of the spine, and for psoas abscess, as the peculiar arching of the spine in the horizontal position led us to suspect that there was some change of structure in

these parts which might account for this occurrence; but the most careful investigation by Dr. Stokes and myself could not detect any evidence of disease there, nor in the circulatory or respiratory apparatus. I, therefore, came to the conclusion that it was a form of neuralgia, and the result of my treatment satisfied me that I was right.

Dr. N. Gueneau de Mussy, in a late number of the 'Archives Generales,' has described a species of tenderness very similar to this, as frequently occurring in diaphragmatic pleurisy, but in the cases recorded by him the patient suffered from severe dyspnœa and orthopnœa, whereas, in my case, the respiration was tranquil. M. Beau has described a variety of rheumatism in the skin, which he terms dermalgia, and which bears much resemblance to this case, but differs from it in occupying a greater extent of surface, and in occurring chiefly on the extremities.—*Dub. Hosp. Gazette, Feb.* 1, 1854, *p.* 2.

22.—ON SOME REMEDIES FOR STOMACH DISORDERS.

By Dr. George Budd, F.R.S., Professor of Medicine in King's College.

[In his 8th lecture on disorders of the stomach, Dr. Budd makes some useful remarks on the use of the mineral acids in various kinds of indigestion. But these have been so well treated of by Dr. Prout and others, that we will here only give Dr. Budd's remarks on *vegetable bitters.*]

Quinine, and the bitters generally, are especially grateful to persons who have injured their stomachs by hard drinking. With such persons they improve the appetite and strengthen digestion, and have a bracing effect upon the system at large.

In persons exhausted by over-work, or wherever weakness of the stomach is the result of general debility from other causes, they often do much good in the same way—*by improving the appetite* and strengthening the digestion.

They do harm in the organic diseases of the stomach; in plethoric states of the system; and generally where there is a furred tongue, or where the urine throws down a sediment of lithic acid, or of lithate of ammonia. Their most striking effect is, to improve the appetite, when this has been impaired from hard drinking or from over-work, or from nervous exhaustion from other causes; and the best time for giving them is from half an hour to an hour before meals.

The different bitters have not precisely the same effect. Calumba has a sedative influence not possessed by the others, and probably on this account has had a wider reputation as a remedy for mere indigestion. Gentian and chiretta (which is of the gentian tribe, and is much employed by practitioners in India), tend to increase the secretion of the liver, or, at any rate, do not impede the secretion of the

liver, which quinine and quassia seem often to do. They are, therefore, better suited to bilious persons, and to those cases of indigestion where the secretions of the liver are defective.

The different preparations of steel are especially useful in the indigestion that occurs in chlorosis, and generally where weakness of the stomach results from anæmia.

They do harm in plethoric states of the system, and generally where there is a furred tongue, or where the urine throws down a sediment of lithate of ammonia or of lithic acid.

The citrate, or ammonio-citrate, is the most agreeable preparation to the taste, and generally the most grateful to the stomach. If there be any disposition to sickness or nausea, or any tendency to furring of the tongue, it may be given in conjunction with the bicarbonate of soda or potash. This makes a mixture having much the same effect as Griffiths' mixture,—the mistura ferri composita,—and far more agreeable.

The muriated tincture of iron is more astringent than the other preparations, and may be given in conjunction with dilute muriatic acid, in the forms of indigestion suited to this latter medicine, when these exist in states of anæmia.

The sulphate of iron, like other metallic sulphates, has a tendency to cause sickness, and should not be given in cases where a disposition to sickness exists.

Steel medicines do good by improving the quality of the blood rather than by their immediate action on the coats of the stomach, and are best given at meal times. They then are mixed with the food, and gradually absorbed with the products of digestion, and are less apt to offend the stomach and to cause headache than at other times.

Whenever steel medicines are given, it is essential that a regular action of the bowels be kept up. These medicines tend to confine the bowels and to cause evolution of sulphuretted hydrogen in them; and, unless this tendency be counteracted, they are apt to fur the tongue and cause headache.

The choice of purgatives is a very important matter in stomach disorders. The different purgatives exert their chief action on different portions of the intestinal canal: some excite the secretion or the peristaltic movement of one part, some of another. In disorders of the stomach and bowels, where a purgative is required, care should, therefore, be taken to select those which are least prone to irritate the injured or disordered part.

Castor-oil, for example, offends the stomach, but acts very mildly on the large intestine. It should not be used in stomach disorders, or where, from any cause, a tendency to vomiting exists; but is better than any other purgative in dysentery, or during convalescence from typhoid fever, when the intestines are ulcerated, and in various other conditions where a speedy and sure purgative, and one not apt to irritate the large intestine, is required.

Senna acts chiefly on the small intestine, and, besides exciting its peristaltic action, increases the secretion from its mucous membrane. It acts, also, on the liver, increasing the secretion of bile. In conjunction with a few grains of calomel or blue-pill, it is, as every one knows, one of the best purgatives in bilious states of the system, or where an evacuant is required; but in mere disorders of the stomach, it is often objectionable, from the tendency it has to cause sickness.

The best purgatives in stomach disorders are aloes and colocynth, which exert their chief action on the large intestine. These medicines may do much harm when the large intestine is ulcerated or inflamed; but in simple ulcer of the stomach, and in the most severe functional disorders of the stomach, they may generally be given without causing either pain of the stomach or sickness. In some kinds of functional disorder of the stomach, aloes seem, indeed, like other bitters, to improve the appetite and strengthen digestion.

Aloes appear to act more exclusively on the large intestine, and irritate the stomach less than colocynth, and hence, in stomach disorders is generally preferable to it.

Where, from the existence of piles, or from pregnancy, or some other condition, these medicines are objectionable, the best substitutes for them in stomach disorders are the saline purgatives, which exert their chief action on the small intestine, and have little tendency to cause pain in the stomach or sickness.—*Med. Times and Gazette, April* 29, 1854, *p.* 425.

23.—*Lactic Acid in Dyspepsia.* Dr. C. Handfield Jones, in the Association Medical Journal, advises the use of lactic acid in dyspepsia. He has chiefly given it in cases of irritative dyspepsia, where the digestion was painful and imperfect, and had been so for some time; he does not advise its use at the commencement of the treatment in a severe case, but only after the irritation and vascular erethysm is somewhat reduced. It should be employed in doses of fifteen to twenty minims, in a half ounce of water, and taken *at* meal times; he states that it seems to mingle with the food, and to supply one of the constituents of healthy gastric juice, which is probably imperfectly produced. Its use need not be confined to cases of dyspepsia, but may be extended to all cases where it is desirable to improve the tone and power of the stomach. It is pleasant, occupies but little space, and the only objection to its use is its present high price; but if much employed it could probably be obtained cheaply.—*Dub. Hosp. Gazette, Sept.* 15, 1854, *p.* 254.

24.—ON DILATATION OF THE STOMACH AS CONNECTED WITH SARCINÆ.

By Dr. R. B. Todd, F.R.S., &c.

[One peculiarity of the vomiting of sarcinæ is, that the fluid soon begins to ferment, and looks like yeast. It is strongly acid, and by

means of the microscope the sarcinæ are easily seen, often accompanied by torulæ. Dr. Todd describes the fermentation as follows :]

It is a special characteristic of this peculiar form of vomit, and one which should particularly arrest your attention, that it begins to ferment immediately after its rejection ; and to such an extent does this fermentation frequently proceed, that if the contents have been received into a basin, they will be found within half an hour after their rejection, to exhibit more than twice their original bulk, and will form a soft, spongy head or scum, such as occurs on the surface of saccharine fluid to which yeast has been added. In consequence of this peculiarity, this vomit has been termed, aptly enough, "yeasty vomit."

It is in the brownish matter which exists so abundantly in this vomit, that you will find, in great multitudes, the vegetable bodies to which the name of "sarcinæ" has been applied.

Besides sarcinæ, we frequently find a great number of torulæ of the same kind as those vegetable organisms which exist so abundantly in yeast. They certainly seem to occur in the majority of the cases in which sarcinæ are found.

Sarcinæ may occur in small numbers in the stomach, as is probably often the case in diabetes mellitus ; but then the vomited matters will not exhibit the process of fermentation to the extent which existed in this case. They have likewise been found in other places besides the stomach, such as in the bowels, the bladder, and in the ventricles of the brain ; whence we may infer, that the conditions favourable to their development may be obtained in other organs, and that these bodies are not peculiar to the stomach.

[On a former occasion Dr. Todd pointed out the fact, that the vomiting of these sarcinæ with abundant yeast-like matter, is very frequently accompanied with a more or less dilated state of the stomach. This is a very important diagnostic symptom.]

This dilatation generally depends upon an obstruction to the onward passage of the contents through the pylorus, in consequence of which they accumulate in the stomach. No doubt a considerable absorption takes place by the walls of the stomach, as in health, otherwise the patients would soon die of exhaustion ; but a large quantity of dissolved and undissolved food remains for three, four, or five days, or even for a longer time, and never passes into the bowel at all ; it accumulates, until the stomach, impatient of its contents, is stimulated to contraction, and at once disgorges the whole of its contents. The ejected matters immediately ferment, and in the yeast-like mass we invariably find the sarcinæ. Now, I do not affirm that sarcinæ are never found but in this fermenting matter ; on the contrary, it is well known that they occur in fluids of the stomach, and elsewhere, without signs of fermentation, but *only in small number*. What I think we are justified in affirming, from my own cases, and many others since

published, is, that *this peculiar yeast-like vomiting, with its myriads of sarcinæ*, is characteristic, and I would almost add pathognomic, *of a dilated state of stomach, with more or less of obstruction at the pylorus.* The most common cause of the obstruction and the consequent dilatation in the cases which have fallen under my own observation, has been the contraction of the cicatrix of a former ulcer, or the presence of recent ulcers, with hard thickened bases, and thickening of the submucous areolar tissue. Other causes might produce a similar effect, such as a cancerous tumour surrounding the pylorus, or a tumour simply pressing on it.

Our patient went on for some time without exhibiting any change in the character of the symptoms, excepting that, by careful feeding, the urgency and frequency of the vomiting were diminished. He was fed exclusively on that kind of food which is readily digested by the stomach itself, such as milk, beef-tea, or other animal broths; and he was not allowed to take more than a very small quantity at a time. After he had been sufficiently long in the hospital to afford us full opportunity of observing his exact condition, I determined to try the effect of the sulphite of soda, which has lately been ingeniously suggested by Dr. Jenner as applicable to these cases. The peculiar virtue of this remedy consists in its power of destroying vegetable life; and, if the symptoms depended on the development of these organisms in the stomach, owing to some peculiar process of fermentation, this drug would be an invaluable agent in the hands of the practitioner.

But I have yet to be convinced that the peculiar sarcina-vomit can be regarded in any other light than as the effect of an organic disease of the stomach. This is the conclusion at which I arrived when I discussed this subject before. It seemed to me, therefore, that, in the treatment of the cases, the practitioner need not concern himself much about the presence of these bodies.

The result of our trial of the sulphite, while it confirmed the efficacy of that drug as an agent destructive to vegetable life, also gave support to the view I expressed, that the stomach symptoms were not dependent on the development of the sarcinæ. On the 3rd of Jan., the patient had vomited a large quantity of brownish looking matter, which fermented freely, and contained sarcinæ in great numbers. On the 5th, he began to take the sulphite of soda, the report on that day being that he had not felt sick since the vomiting on the 3rd.

We gave him half a drachm of the salt dissolved in an ounce and a half of water every four hours, and, after he had taken the remedy for two days, we obtained these results. In the evening of the 6th he vomited freely of a brownish liquid, and about four o'clock in the afternoon of the 8th, he was again very sick, and vomited a large quantity of a similar fluid. On the 8th, the quantity of the sulphite was increased to a drachm. On the 10th, the man vomited about three pints of a brownish liquid, which fermented slightly. In this we were unable to detect sarcinæ; still some few might have been

present and have escaped observation, as, in the microscopical examination of such fluids, we are only able to subject a very minute quantity to observation. The vomiting then continued as before, but, upon subsequent examinations, we were unable to detect the presence of sarcinæ. On the 10th, 12th, 13th, and 14th, the man vomited, although he was taking large doses of the sulphite of soda. During all this time he suffered very much from a burning pain referred to the lower part of the œsophagus and the cardiac orifice of the stomach.

After the sulphite of soda had been taken for nine days without any manifest alleviation of the symptoms, its use was given up; and he was put upon alkalies and opium. On the 16th, the report says he had not vomited for forty-eight hours, and the pain was less. He was then taking half a drachm of the bicarbonate of potash, with five grains of nitre dissolved in an ounce and a half of water twice a day, and he was allowed four ounces of brandy.

On the 17th, the vomiting returned, and forty-two ounces of fluid were rejected, in which sarcinæ were present in considerable numbers.

On the 19th, vomiting occurred again, and he appeared much weakened and exhausted.

On the 22nd, he vomited a large quantity of black blood, and he died on the 24th.

The disease in this case was limited to the stomach. This organ was a good deal dilated, although rather less than, when distended with gas during life, it appeared to be. In the pyloric region you may observe two ulcers, each as large as a half-crown piece, with considerable thickening of the submucous tissue. These ulcers were placed opposite each other, one on the anterior, the other on the posterior wall, and, like two fungoid growths, came in contact, obstructing the channel of the pylorus, which with difficulty admitted the passage of the little finger. Here, then, was obviously the cause of the obstacle to the passage of the food, and of the dilatation of the stomach; and here, too, was the cause of the generation of the peculiar yeast-like matter.

I have thought it right to bring this case under your especial notice, as affording additional evidence in favour of the view which I expressed in 1851, that the sarcina-vomiting, when taking place in large quantity, may be regarded as diagnostic of dilatation of the stomach, and, with great probability, of pyloric obstruction too. Whether this peculiar form of vomiting in large quantities occurs simply from functional derangement of the stomach, I have yet to learn. Sarcinæ are undoubtedly formed in the stomachs of diabetic patients (which are always large), and perhaps also in the bowels. But in none of these cases do we meet with the extraordinary yeast-like vomiting.

A second reason for my calling your attention to this case is, that it has served to furnish a very clear indication of the value of the sulphite of soda in cases of this description. This drug certainly was

destructive to the sarcinæ, but it did not in any degree alleviate the suffering of the patient. As a remedy, it may prove of great value if in any case, the generation of sarcinæ can be shown distinctly to be the sole or the principal cause of the symptoms, or to aggravate those symptoms. Our patient, however, experienced relief chiefly from a regulated diet, from opium, and alkalies.

Nevertheless, the sulphite of soda is an addition to our resources, and must not be rejected; nor must we expect too much from it. When fermentation is too active, it may prove useful in checking or completely destroying it.

On the 5th of April, 1853, a case of enormously dilated stomach was detailed to the London Pathological Society by Dr. Miller for Mr. Humby. The stomach was capable of containing ten pints and a-half of fluid. Dr. Miller found abundant specimens of the sarcina ventriculi in the rejected fluids. Two very able physicians arrived at different conclusions as to the diagnosis of this case. Had the nature of the vomiting been taken into account by both, it is probable that they would have formed the same diagnosis.

Several cases of sarcina-vomiting have been put on record by Dr. Ransom, of Norwich, in a valuable paper, published in the 'Medical Times' for Nov. 12 and 19, 1853. In most of these pyloric obstruction and dilated stomach existed, and, from an analysis of a large number of cases, Dr. Ransom infers that sarcinæ very commonly coexist with the following group of symptoms, viz., obstinate chronic vomiting of large quantities of an acid, watery fluid, which forms a scum on the surface; epigastric pain, constipation, and wasting. And he adds, "that the cases which have occurred presenting this group of symptoms have been pathologically most varied; but *pyloric obstruction* either proved by *post-mortem* observation, or inferred from the symptoms during life, was *common to all.*

In the months of March and April, 1853, a woman named Laws, aged 30, was in the hospital, in whom the symptom of chronic vomiting of yeast-like matter with sarcinæ was very prominent. The case was diagnosed as one of pyloric obstruction and dilated stomach. She died early in May. The stomach was found much dilated, and readily held eighty-one ounces of water. An indurated condition of the pylorus by cancerous deposit was found to be the obstructing cause. The pylorus was so constricted that the little finger up to the first joint only could be introduced through the orifice of the stomach into the duodenum, and that with difficulty.

In December, 1852, and January, 1853, we had in the hospital another case of chronic vomiting, with extreme emaciation,—a woman named Taylor, aged thirty-three. In this case there were no sarcinæ, nor were the vomited matters yeast-like, nor could we by palpation or percussion discover any evidence of a dilated state of stomach. A tumour was detected near the pylorus, and after death this proved to be cancerous, compressing the pylorus and the

pancreas ; but there was no dilatation. Here, then, was an instance of obstructed pylorus without sarcinæ, and these were absent probably *because* there was no *dilatation.*

For excellent notes of both these cases I am indebted to my clinical clerk, Mr. Plowman.—*Med. Times and Gazette, July* 1, 1854, *p.* 1.

25.—*Sarcinæ Ventriculi.* By Dr. W. L. Lindsay, Dumfries.—[From the subjoined remarks of Dr. Lindsay, it will be seen that the presence of sarcinæ in ejected fluids from the stomach, do not prove so surely as some writers assert, the existence of pyloric obstruction.]

Sarcina appears to me to be of interest chiefly as indicative of a disordered condition of the intestinal mucous membrane, as showing its proclivity to become a nidus for the development of certain entophytes. I have met with it in such a variety of circumstances, that I am almost compelled to regard its presence in the stomach as a result, and not a cause of disease. I have found it alike in most severe cases of dyspepsia, attended by chronic vomiting, and in cases where the general health was in no appreciable degree affected, or where there was a total deficiency of evidence of gastric disturbance. When abundant, it may cause serious symptoms; but it probably does not cause any given disease. Its abundance has generally been proportionate to the severity of the gastric symptoms in cases seen by myself. I believe, therefore, that:—

1. Sarcina is not a cause of many cases of obstinate vomiting of a peculiar kind, as is usually supposed, but is only a sign of a disordered condition of the stomach or general system.

2. It is not pathognomonic of pyloric obstruction, gastric dilatation, or other lesion of parts of the digestive apparatus, though it may occur very frequently in these pathologicol conditions.

3. When it does occur in connexion with these or similar lesions, it is as a concomitant or result.

4. It will probably be found comparatively common in a great variety of diseases, and in very slight deviations from the state of health.

5. The facility with which it is broken up and disintegrated, and the fact of its not having been sufficiently looked for, are the most probable reasons why it is seldom or never found lower in the alimentary canal than the stomach.—*Med. Times and Gazette, Aug.* 5, 1854, *p.* 135.

26.—*On Hæmatemesis.* By Charles Neate, Esq., Uttoxeter.—[In a case of hæmatemesis which resisted the usual remedies of acetate of lead and opium, sulphuric acid, turpentine, &c., Mr. Neate was successful as follows :]

I was now induced to try ergot of rye, and commenced by giving him a drachm and a half of the powder, divided into eight doses ; one to be taken every four hours ; and to omit the other medicines.

15th.—Better ; has vomited no more blood since taking the second dose.

16th and 17th.—Very much improved ; no return of blood, except in expectoration, which is rather sanguineous. To continue ergot.

20th.—All the distressing symptoms have entirely disappeared, and there is no tinge of blood whatever in expectoration ; indeed, from this time he very rapidly convalesced, and, with the assistance of wine and nutritious diet, gradually recovered strength, and is now able to do light work.

Remarks.—Now, in this case the ergot has shown itself as possessing considerable virtues, and evidently of an entirely specific nature. At any rate there is one recommendation to its use, that it is neither an excitant nor a stimulant.—*Lancet, Aug.* 5, 1854, *p.* 101.

27.—TAPE-WORM UNSUCCESSFULLY TREATED BY MALE FERN AND KOUSSO.

By Dr. George Paterson, Tiverton.

[The following cases show that we must not place invariable confidence in these medicines. The first was a man aged 38, who, after drinking some cider, parted with a large quantity of tape-worm. Dr. Paterson then says]

The first thing I prescribed for him was a dose of turpentine and castor-oil, which acted powerfully on the bowels, but brought off no portions of the worm. He was then directed to take a draught containing half-a-drachm of the oleo resin of male fern, then recently recommended in the Edinburgh Monthly Journal, and which I had expressly procured from Messrs. Duncan and Flockhart, of that city, and to follow this up in the course of a few hours by a dose of castor-oil. The following day he brought with him upwards of twenty feet of tape-worm, the greater part of which had come off entire, but dead, after taking the medicine prescribed. The male fern had not produced any action of the bowels by itself; but soon after taking it he felt as if something had given way, and were descending in his bowels, accompanied with great faintness and prostration. The worm did not come off until after the oil had begun to operate. The portion of worm discharged tapered exceedingly towards one of its extremities, the joints becoming extremely small and slender. Other equally minute joints were found broken off from the rest of the worm passed ; but, as is generally the case, it was impossible to distinguish the head. All the uneasy symptoms, however, disappeared from that moment. By way of precaution, I repeated the medicine about eight days afterwards, and again a third time eight days after that, but no more portions of worm came away.

Thus far nothing could have been more satisfactory than the effects of the male fern. It confirmed to my mind all that had been reported

in its favour, and I set down the case as a decided cure. But after the lapse of two months, on the 25th January, 1853, this man again applied to me on account of a return of his symptoms. It appeared that he had only remained free of them about four weeks. Then, one morning while going to his work, he was seized with over-powering sickness, vomited blood, and fainted in the street. In the evening the old itching of the nose and anus returned, and on awaking the next morning he discovered about the bed from thirty to forty joints of tape-worm, all dead. He had seen no more since that day; but, as the itching and depression of spirits continued, he believed that there were more to come away. I immediately made him take the male fern in the manner formerly prescribed. About three hours after taking it, followed by the castor-oil, a dozen joints or more, dead and discoloured, were brought off. The uneasy sensations immediately ceased; and, although I took the precaution of repeating the dose as before, no more joints came away. I met him several times after in high spirits, and flattering himself that he was now fairly quit of his troublesome inmate.

On the 18th of April he applied a third time for relief. This time he had remained quite comfortable for nearly three months—in fact, until a week before his application—when, while walking along the street, he felt a return of pain in his right side, and a little itching. Conscious of what these symptoms indicated, he examined his clothes immediately on reaching the work-shop, and found that some joints had passed from him. More came away while he was at work, and from that time more or less had been passing nearly every day, all alive, and all single. He stated that they had been passing in "scores," and that on the previous day there had come from him "one living mass," more than ever he had passed at one time, except after the first dose of the male fern. As several trials of this remedy had failed to eradicate the parasite, I now resolved to try what the kousso would do, and ordered him to take half an ounce in the manner usually recommended. Half an hour after taking it, he felt as if something were dislodged within him, with much pain and exhaustion. Almost immediately upon this the bowels acted, and he brought off upwards of twenty feet of tape-worm, a very considerable length of which was unbroken. The joints of this were generally larger than in the one brought away by the male fern, and presented more of the tapering and gradual diminution observed in it.

As respects a complete cure, however, the kousso has proved equally inefficacious with the male fern. For on the 12th of July, the man again presented himself with a return of his complaints. He had continued quite comfortable until within a fortnight previously, when he was again suddenly seized in the street with faintness and vomiting. He then began to bring off live joints, and had been doing so ever since, with his old symptoms as bad as ever. Another dose of the kousso was prescribed for him, which brought off several more feet of

tape-worm, with much pain and griping. His symptoms were once more relieved, and he gave up attending. The man has since left the town; but I am informed that he still continues subject to returns of his complaint.

[The second case was a young woman, aged 24. Both the male fern and kousso were tried in succession, but both failed, while turpentine and castor-oil succeeded in bringing away several yards.]

Remarks.—1. It would appear from the above cases, that the kousso and etherial extract of male fern, are, like all other remedies that have hitherto been prepared for tape-worm, liable to, at least, occasional failure. At the same time it is certain, from the effects that followed upon their administration in these instances, that they are remedies of great power, very obnoxious to the parasite, and therefore valuable additions to our means of treatment.

2. I should be disposed to believe from what was observed in these cases that the same remedy is not suited alike to every case; but that in one subject the kousso, in another the male fern, and in another the turpentine, will be found to be the most appropriate remedy. Thus, in the second case, neither the male fern nor the kousso brought off any of the worm, while turpentine invariably did so. In the first, on the contrary, turpentine and castor-oil were repeatedly given before the male fern, without having the least effect. Again, we sometimes find the worm, not only detached and dislodged, but carried downwards and expelled by the male fern and kousso, unaided by any purgative; while at other times they require to be followed by the administration of a purgative dose. As to the comparative energy of the kousso and male fern, it would appear from the above cases (in which both were successfully given to the same person) to be nearly equal, and in the phenomena attendant upon their operation both remedies are very much alike.

3. The first of the cases I have narrated is in many respects a remarkable one. It furnishes a striking portraiture of the symptoms of the disease in a very aggravated form; and the immense number of joints that were discharged at various times, both singly, and in pieces of several feet in length, would seem to indicate either that there must have been more than one of the parasites in the man's body, or else that it is capable of reproduction and of attaining its former growth in an incredibly short space of time after large portions of it have been detached.

The same case affords an instance of the worm finding its way into the stomach, portions of it being stated to have been brought up by vomiting in round balls. This is a more common occurrence with other kinds of intestinal worms. Thus I have met with several instances, both in children and adults, where lumbrici have escaped by the mouth or nose. In one case of an hysterical and hypochondriacal female the circumstance of one of these worms having escaped by the

mouth produced an impression that she still had one in the wind-pipe. The sensation, which was partly hysterical and partly perhaps due to an enlargement of the thyroid body, led to continual efforts to bring up the worm and dislodge it with the finger, which necessarily produced increased local irritation, and the failure of which aggravated her despondency and low spirits. She vainly resorted to several medical men, including myself, for relief—neither reasoning nor such remedial measures as the nature of the case suggested having succeeded in overcoming the delusion.

5. In the second case we have an instance of the co-existence of another kind of worm with the tape-worm. This is worthy of notice, principally as showing (what has been pointed out by Dr. Watson and others) that the term "solitaire," which some French writers have applied to this worm as a distinguishing characteristic, is not correct.

6. Besides the above three cases falling under my own notice in the course of a few months, I have heard of another instance under the care of one of the medical gentlemen of this town, in which the kousso brought off several yards of the tape-worm, but equally failed to eradicate the disease. One would almost be disposed to argue from so many instances of a somewhat rare affection observed within a short period among persons, the majority of whom are natives of the place, that the disease is more than usually common in this locality. On inquiry, however, among the oldest practitioners of the town, they inform me this is by no means the case, and that whatever fortuitious circumstances may have concurred to multiply instances within so short a period, their experience of such cases is not larger than that of the generality of medical men in other places. —*Monthly Journal, July* 1854, *p.* 40.

28.—ON SOME TÆNIFUGE MEDICINES.

By M. Strohl, Strasbourg.

The fruits called *tatzé and zareh* are the produce of a shrub of the family of the myrsinaceæ, the "*myrsina Africana.*"

This plant is found in Abyssinia, in moist rocky places at the Cape of Good Hope, in the Azores, in Algeria, and other parts of Africa. According to M. Schimper, it is met with in Abyssinia at an elevation of 9,000 feet in dry shady places.

The author details six cases in which this drug has been used:—

Case.—Professor Tourdes.—H., a boot-maker, of lympathic temperament, and delicate constitution, came to Strasbourg in 1842. At times he suffered from general indisposition, want of appetite and indigestion; but never suspected that he was the subject of tape-worm until August, 1853, when he first discovered some large fragments in the stools. Frightened at this discovery, he went to consult M. Tourdes the

same day, and as there existed no contra-indication he was ordered a dose of tatzé the following day in soup of lentils. The patient did not take it without great repugnance. No colic nor motion followed for three hours; a dose of castor oil was then administered, and an hour after there followed a very abundant evacuation, along with which was expelled a bothriocephalus, measuring eight or ten yards. The tænia was divided into two fragments, one of which terminated in very fine, almost filiform joints; some joints of small size were disseminated through the fæcal matter, but the head was not discovered —very accurate search was not made for it. For some time after the patient's health was much ameliorated: the moral impression had a salutary effect; but now, his fears returning, he affirmed that he could not take *tatzé*. So invincible a repugnance does he bear against this remedy that, although aware of its efficacy, he cannot bear the idea of taking it.

From these cases it would appear that tatzé is taken with much greater repugnance than saoria, and that the taste of it is more acrid and persistent. In three, vomiting followed soon after the administration of the drug, nevertheless the portion which remained was sufficient to cause the expulsion of the tape-worm. Thence, we may infer that the dose was, possibly, unnecessarily large, and that a smaller quantity would be more easily swallowed, and cause less disagreeable symptoms, yet be equally efficacious. The patient never complained in the least of colic. The purgative effect was not constant, perhaps on account of the quantity of tannin which tatzé contains. One of the patients only suffered from general indisposition and headache, not, however, of much moment. Tatzé seems to be tænicide.

As to the urine; where this was watched, it was found to be of an inky colour, probably analogous to the coloration that has been already noticed after the use of saoria.

Tatzé is a powerful tænifuge, which has succeeded in all the six cases in which it was administered. This number is too small to draw any conclusion as regards the constancy of its action, but it is quite sufficient to assure us that it at least deserves to be placed among the resources of materia medica. Tatzé is less gentle in its action than saoria; yet it would be worth trying whether by a diminution of the dose or the combination with it of some other pharmaceutic preparation, as opium, for example, it would not be possible to diminish the troublesome symptoms attending its use. As to its mode of administration, it should be given in doses of about half an ounce, reduced to powder, and blended in aptisan or aromatic infusion; if after three hours it has not caused a motion from the bowels, or if in stools which have followed no traces of the worm are to be discovered, a dose of castor oil should be administered.

In conclusion, from these trials, insufficient it is true, it results that saoria and tatzé deserve our attention, and it is probable that

saoria will hold the first place among our tænifuge remedies. Mayor, who has divided the bothriocephalus into two kinds, according to its joints, says the etherial extract of male fern expels that with the long joints, whilst that with the short joints requires the powder of the bark or pomegranate root.—*Gaz. Medicale.—Dub. Hosp. Gazette, August* 15, 1854, *p.* 217.

29.—TREATMENT OF DIARRHŒA BY CHLORIC ETHER.

By George B. Mead, Esq.

[We often find that many cases of diarrhœa resist all ordinary treatment, opium amongst the rest. In 1846, 7, and 8, an epidemic prevailed at Bradford, Yorkshire, which was attended by a diarrhœa of an intractable nature.]

This diarrhœa was combined in many cases with vomiting and spasmodic pain of a very distressing character. We had very little difficulty in treating those cases in which pain was absent, but we found a certain proportion in which the diarrhœa obstinately continued despite the use of a multitude of remedies; and the pains, though temporarily relieved by the use of opium, returned directly the narcotism passed off; the opium suspended, but did not remove, the spasms. At length we adopted the following formula:—

℞. Ætheris chlorici ʒij.; speciei pro conf. arom. ʒss.; misturæ cretæ compositæ ad ʒvj. M. Fiat mistura.

The fourth part was directed to be taken directly by an adult, and repeated every half hour, or at still longer intervals, according to the severity of the attack, and its effect upon the patient. Occasionally, opium, either in the solid form or the tincture, added to the mixture, was given; but this was seldom necessary, and I think every case would have recovered without its use. The effect of the ether in every case was marvellous. The spasms and pains were relieved, as if by a charm; the diarrhœa ceased; warmth returned to the extremities; the pulse, before perhaps flagging, increased in force and volume; one bottle never failed to relieve, or two to cure even the worst cases in which all other plans had failed. The relapses were infrequent, and were generally checked at once by a single dose. After the introduction of the chloric ether, we had no further trouble with diarrhœa. The medical man in whose practice this occurred is since dead; otherwise I am sure he would have felt great pleasure in confirming this statement. Often has he expressed to me his high opinion of the efficacy of the ether in cases of diarrhœa combined with spasmodic pain. After this, at the time the cholera last visited this country, I was residing with Dr. Morris, of Spalding. It reached Boston. Great alarm existed in Spalding, and the public were fully aware of the importance of checking the premonitory diarrhœa which began to prevail, and was exceedingly troublesome in many cases to check. Recollecting the ether, I ventured to suggest its use. My friend acquiesced. It was tried, and in not one case failed. As at Bradford, hundreds of cases in which

alarming cramps existed were cured like magic; none ran on into Asiatic cholera, though many appeared to be on the verge of it, or, at any rate, were equal to those of English cholera of the severest character. So prevalent was the diarrhœa, that the surgery was thronged from morning to night by applicants for medicine; the policemen in the streets, sailors in the vessels on the river, travellers upon the rail, were equally affected: the cause was evidently ubiquitous, whatever it might be.

At last, one morning early, I was summoned in haste to a patient, an old woman, residing in one of the most unhealthy localities in Spalding. I found her presenting unmistakeable signs of labouring under Asiatic cholera in an advanced stage; she was blue, almost pulseless, and the cramps were of a most violent character. I had seen English cholera in its worst and most fatal forms, but never aught like this. I have a vivid recollection of the scene, and remember well I stood as it were aghast at the sight of her agonies. Having directed her attendants how to act, I instantly returned home, and sent a mixture, increasing the dose of ether, but with very little hope of success. I ordered it to be given at very short intervals, and, in the course of an hour or two, saw her again, in company with my friend. We were delighted and surprised to find her greatly improved. We continued the remedies, and by the evening she was out of danger. Symptoms of relapse appeared several times during the next day or two, but were at once checked by the use of the remedy. The patient, though advanced in years and greatly debilitated, having led a somewhat irregular life, completely recovered, and died about a year afterwards, of a totally different complaint. The remedy obtained quite a notoriety in that locality; to such an extent was it used, that we were told by an extensive wholesale druggist he had sold more to us than to all the rest of his connexion put together.

A gentleman travelling by the Great Northern Railway was attacked by severe diarrhœa. He got out at Spalding, and consulted Dr. Morris, who prescribed this remedy; it at once relieved him. In conversation, he mentioned to him how valuable he had found it in the treatment of diarrhœa. On his return home, the gentleman told his usual medical man of the circumstance; and he, in consequence, was induced to try it, with great success.

In 1850 and 1851, I was again residing in Yorkshire, and there saw much diarrhœa. I used the ether extensively, and never found any case in which it was properly administered where it failed; indeed, I recollect some equally striking cases with those I have enumerated, in which it might indeed be said to have acted like a charm. I could refer to many of my medical friends who have used it upon my recommendation, and whose experience, after numerous trials, has strongly corroborated my own. Though I have used it in at least fifteen hundred cases myself, and indeed I think not improbably three thousand cases, I have never yet found it fail.—*Association Med. Journal, Sept.* 8, 1854, *p.* 819.

30.—*Sulphate of Bebeerine in Diarrhœa.*—Mr. Matthews, of Manchester, strongly recommends in the 'Lancet' the use of sulphate of bebeerine as a remedy for severe diarrhœa, in fact, he states that he has found it "a very near approach to a specific, and that, with a very few doses, as a rule; indeed, in many instances, its effects are magical, for in the course of half an hour I have seen a patient restored from intolerable anguish to perfect ease." He generally first gives a pill, consisting of two grains of calomel and half a grain of opium, and if there is great pain, or the vomiting is urgent, orders a sinapism to the scrobiculus cordis, and then follows up with the following mixture:—Sulphate of bebeerine twelve grains, sulphuric acid and rectified ether, of each, twelve minims, cinnamon water six ounces; mix. One ounce to be taken every four hours.—*Dub. Hosp. Gazette, Sept.* 15, 1854, *p.* 254.

31.—ON SOME POINTS IN THE PATHOLOGY OF THE LIVER.

By Dr. W. T. Gairdner.

[In an interesting paper on this subject read before the Physiological Society of Edinburgh, Dr. Gairdner gives us some interesting results of his inquiries on the aggregate constitution of the liver in certain diseases.]

The *normal liver* is composed of very numerous hepatic glandular cells, disposed amid a network of capillary vessels and biliary ducts, and fed by a large amount of blood. It may be regarded as consisting in a chemical point of view, of water to the amount of about three-fourths; of an insignificant amount of fatty matter; and of various albuminous solids, amounting to nearly one-fourth of its weight.

The *fatty liver* consists of precisely the same elements in a similar structural arrangement. The aggregate of solids and water may be slightly increased or slightly diminished; their percentage, however, is invariably considerably reduced, owing to the enormous development of oil in the glandular cells, by which the volume of the organ, as well as its weight, may be almost indefinitely increased.

The *waxy liver* is a true degeneration; for this condition is not, like the fatty liver, due merely to a morbid increase of one of the non-essential elements of the organ, but to a metamorphosis of its most essential, *i. e.*, its glandular structure, into a much more dense albuminous material than in the normal condition; a change which results in total destruction of the function, as well as the structural characteristics of the gland-cells, and in a great increase of the solids of the organ at the expense of the fluids, the blood ceasing to circulate freely, and the water being diminished from three-fourths to three-fifths, or possibly in some cases to one-half of the weight; the solids being correspondingly increased, the fat either increased or unchanged.

Cirrhosis of the liver is either an independent degeneration, or it may spring from the waxy or the fatty conditions. In the former case, it assumes at once the atrophic form, and all the elements may simultaneously disappear; the atrophy commencing, however, in the glandular epithelium, and thus giving rise to an apparent relative hypertrophy of the fibrous tissue.

Finally, the *waxy and the fatty liver* are not unfrequently met with as a combined lesion. In such cases the liver is usually very much enlarged, dense and opaque yellow on section; intermediate in specific gravity between the two typical forms of disease, and therefore approaching the normal density; and it presents under the microscope a degenerated epithelium, and very numerous but unusually small fatty granules and globules. I have never made the analysis of such a case, but it is impossible to doubt what would be the result. In the purest forms of the waxy disease, again, I believe the amount of fatty matter would be found very small indeed, at least if one can judge from the results of microscopic examination.—*Monthly Journal, May*, 1854, *p.* 398.

32.—ON THE USE OF TURPENTINE IN JAUNDICE, &c.

Turpentine has long been used in purpura hæmorrhagica, and cases where the blood seems to become more diffluent than natural. Its efficacy in yellow fever has latterly been well shown by Dr. Laird, who has compiled his report from his own experience, and from the records of the naval hospital at Bermuda, where this disease is so frequently epidemic. He considers the pathology of yellow fever as primarily connected with a morbid alteration of the blood, and that the turpentine, besides its general properties as a sedative, styptic and antiseptic, possesses also peculiar power of action on the skin and kidneys. I can bear ample testimony to its success in another form of jaundice, which we meet with much more frequently in fever, and arising from a totally distinct cause, I allude to jaundice from excessive secretion of bile. In the year 1845, Dr. Corrigan treated, with turpentine, a case of this kind ("considerable discharges of blood, mixed with bile, from the intestines,") which occurred in the Hardwicke Hospital, and which recovered, even after the brain began to be affected. I have had in my wards several cases of this kind within the last three months, all of which recovered under the use of turpentine. The usual dose ordered is a drachm every two or three hours. It is frequently given with nitrous spirit of æther, to promote perspiration and avoid strangury. The following case, out of several, will answer as an example of this form of jaundice.

Case reported by Mr. Abbott. John Colgan was admitted into the Hardwicke Hospital, January the 11th, complaining of rigors, headache, and pain in his back. He was four days ill; he was universally jaundiced. Tongue broad, white, and dry; great thirst; abdomen

swollen and tympanitic; great nausea; bowels free; no tenderness, except in left hypochondriac region, where the spleen can be felt much enlarged. Pulse 100, weak.

Ol. terebinth. ʒi. 2dis horis ex aquæ cyatho.

12th. Nausea continues, with vomiting of dark bilious matter; alvine discharges copious, fluid, well tinged with bile; urine also loaded with bile; skin burning hot. Pulse 84, weak.

Cont. ol. terebinth.

14th. Pulse 90; tongue moist; perspiring slightly; no vomiting; nausea much diminished; splenic enlargement less; jaundice diminishing.

Recovered slowly; convalescent Jan. 30th; discharged cured Feb. 14th.

In this form it would appear that there was an excess, rather than a suppression, of the secretion of bile; as in the former all the tissues are tinged of a yellow colour, seldom, however, so deeply or so bright; the conjunctiva is less injected, and the face is not so congested, nor the appearance of prostration so great. If there be vomiting, there is usually copious discharge of bile, and the alvine evacuations are also well coloured therewith. There is frequently bilious diarrhœa. These cases are with us generally epidemic, while the former class are sporadic. About two years ago there were a great many of them, and several of them proved fatal. The post mortem appearances which we found were constant, and differed remarkably from those found in such cases as Mahon's. The surface of the body was yellow, and had frequently spots of purpura hæmorrhagica diffused over it. The spleen was invariably greatly enlarged and very soft, in many cases almost diffluent, and could with difficulty be removed entire from the body. The liver was generally enlarged; it was in some cases friable, and more yellow than natural; the gall-bladder was always full of dark bile, which flowed freely into the intestine; the mucous membrane of the stomach was generally congested, as were also the depending portions of the lungs.

This form of jaundice I have occasionally treated with sulphate of quinine, but without any good effect. Occasionally the stomach is so irritable that the oil of turpentine is rejected; this, however, seldom continues, and can in general be obviated by the application of a blister to the epigastrium. When the stomach continues to reject the officinal preparation, I have seen the æthereal oil tolerated, and in this disease prove efficacious.

There is a third form of jaundice occasionally met with in fever, and which is of great practical importance to be acquainted with. A patient in continued fever, without any appearance of jaundice or hepatic symptoms on the previous day, suddenly becomes quite yellow about the fourteenth or fifteenth day of fever, and all the tissues become impregnated with bile; besides giving the usual tint to the skin and conjunctiva, the bile passes off by the bowels most copiously, and

the urine is loaded with it. In one case I observed that the posterior part of the dorsum of the tongue, the soft palate, and fauces, had assumed the yellow hue, and that not merely the saliva but the expectoration was deeply tinged with it.

These cases are purely critical, and differ from other forms of crisis only in the organ in which the critical action takes place. Instead of occurring in any of the usual modes, such as perspiration or diarrhœa, &c., it occurs by a profuse secretion of bile, which endeavours to pass rapidly away through all the outlets of the body. Such cases require but little treatment; the rapidity with which all the icteric symptoms pass off is most surprising. There are two facts, however, to be noticed regarding it; one is, that the premonitory symptoms of this form of crisis are more severe than I have ever seen in any other; they were well marked in the case of Ellen Smith, æt. 26, admitted into the Hardwicke Hospital June 6th, 1853. She was, in the course of fever, suddenly seized with bright flushing of the face, delirium, and increased rapidity of pulse. This was followed by universal jaundice and excessive discharges of bile per anum and in the urine. From this she as rapidly recovered, but again afforded an example of the other important feature in this mode of crisis, which is, the excessive debility which follows it. Although she was well supported and properly nursed, she suffered a premature confinement, and was very long in gaining her natural strength.

I have also very frequently seen jaundice arise in the course of fever, as a symptom of pneumonia.—*Dublin Hospital Gazette, July* 1, 1854, *p.* 166.

DISEASES OF THE URINARY ORGANS.

32.—ON DIABETES AND ITS RELATION TO BRAIN AFFECTIONS.

By Dr. Richard H. Goolden.

[The following views of Dr. Goolden on the nature of diabetes will be read with interest. We have been accustomed to look upon the stomach or kidneys as the organs most implicated; but Dr. Goolden considers that the brain has more to do with the disease than has generally been suspected.]

Diabetes was regarded by Dr. Prout as a form of dyspepsia—a "paralyzed function of the assimilating organs"—and it was a great advance in its pathology to relieve the kidneys from the blame of all the wrong that they are constantly doing their best to remedy; and I am not aware that any considerable advance has been made in our knowledge since that time, if we may except some negative knowledge as to the effect of remedies, and Heule's argument, in his "Handbuch der Pathologie," that the sugar is not necessarily the product of food;

but that subjects fed entirely on nitrogenous food produce it in considerable quantities, and that it seems to be formed rather at the expense of the muscular tissue of the body than of the fat. My own experiments have clearly demonstrated the fact that a hospital milk diet, with a good allowance of extra bread, butter, barley-water, and soda-water, does not increase the amount of sugar excreted ; and that an exclusively animal diet does not diminish it with any such certainty as to justify the inference that the sugar is formed from the farina or sugar of the food.

The experiments of Bernhard prove the formation of sugar in the liver and its destruction in the lung, determined by some nervous influence, the centre of which is situated in the floor of the fourth ventricle at the origin of the eighth pair, and these experiments have been repeated by most of our own physiologists with success. The mode of performing them, and their difficulties and cautions are well described by Dr. Parry, in the last publication of the 'Guy's Hospital Reports.'

The inferences drawn from these experiments seem to be, not only that sugar is abundantly formed and excreted by the kidney, when the pyramidal body is delicately punctured, but that the same result of irritation may be produced by the influence of galvanic currents on the pneumogastric nerve, and that such stimulus must act through the medium of its cerebral organ ; the pneumogastric nerve not being that which presides over saccharine secretion, but rather being a nerve of sensation, and conveying the sensation which regulates all the respiratory actions, whether of normal or of hurried breathing, yawning, sneezing, coughing, crying, laughing, &c., and is possibly the nerve that conveys the physical impressions of mental emotion, especially in connexion with visceral disorder.

It is not my object at present to enter into this subject as a physiologist, but to contribute some clinical facts which may lead to a more rational course of treatment of the disease in question than hunting after specifics ; and when we shall have ascertained something more definite than the present state of medicine possesses, even if we do not pretend to cure the disease, we shall have grounds for separating in our treatment the cases which may be organic from those which are functional. We may even hope to see a large class of functional cases detected and cured, and if we cannot restore organic changes, we may at least do something towards relieving the distressing consequences, or at all events we shall not add to the distress by needless privations and useless remedies.

Diabetes is not so common a disease, in its aggravated form, that we get a large field of experience even in our great hospitals ; and it is only by seeking for such cases amongst our medical friends that we are able to obtain more than two or three cases in a year ; indeed I have known a year pass over without meeting with a single case, even amongst the large number of applicants as out-patients, from whom

we might have selected them, and I have generally observed that two or three cases have appeared about the same time. But saccharine urine is a much more common affection, especially in children, and is often concomitant with other matter in excess, as the lithic acid, lithate of ammonia, and especially phosphate of lime and albumen; and on the examination of the urine of every patient admitted into the medical wards of St. Thomas's, we have found sugar in a considerable proportion, of which I intend to give a statistic report; by that report it will be observed that in cerebral or nervous diseases the absence of sugar is the exception and not the rule.

For some months I have been engaged in considering this subject. I have examined every case of epilepsy, paralysis, and chorea that has applied at the hospital during my weeks of admission; and not only have I found sugar in a large number of these cases, but I have found the sugar disappear as the symptoms are relieved by treatment. Ordinarily there is no diuresis, and the urine is often turbid, and frequently ammoniacal, and the specific gravity from 1·020 to 1·024. As the ammoniacal salts interfere with the operation of Trommer's test, I boil the urine for a few minutes, with the addition of a small quantity of pure soda. This sets free the ammonia, and precipitates the phosphate of lime, and then I proceed as usual with the addition of three or four drops of a solution of sulphate of copper, and boil it again with a slight addition of alkali. A yellow precipitate then indicates the presence of sugar or some deoxidizing substance.

Several years ago, a case which ended fatally occurred under my treatment in St. Thomas's Hospital in which the urine suddenly lost all traces of sugar. On the one day he passed twenty-four pints, specific gravity 1·048, clear, straw-coloured; and on the following day the quantity decreased to fourteen ounces, with pink sediment, specific gravity 1·012, and the patient was bathed with perspiration. He was seized with pneumonia, and died within five weeks of phthisis, or at all events with vomica in the apex of each lung. There was no trace of pulmonary disease prior to the change in the condition of urine. This case impressed me with the idea that Prout's theory was not altogether correct, and I thought it improbable that the symptom which so suddenly gave way on the development of pulmonary disease must depend upon some cause other than partial paralysis of the digestive functions, or chronic dyspepsia, and that in that case it could not have depended upon any disorganization of structure.

From that time I omitted no opportunity of obtaining diabetic patients for observation, but I did not meet with any other case in which the diuresis suddenly disappeared; and although I thought some of my patients were benefited by treatment, the amount of benefit never satisfied me that the disease itself was at all removed. Fluctuation in the amount and specific gravity of urine appeared quite independent of any treatment adopted; but I assured myself of the

fact, that the amount of sugar excreted by the kidneys was not materially diminished by a pure animal diet and opium, nor increased by a milk diet, with a plentiful supply of bread, rice, and barley-water, and even cane sugar. In drawing our deductions from this fact, it is necessary to bear in mind that diurnal fluctuations are constantly taking place, and that, under the same treatment, constantly persevered in, a variation of considerable amount occurs from one day to another, so that we must take the average of a week at least to determine whether treatment is doing anything towards the diminution of the symptom, unless, indeed, the diminution be so considerable as to leave no doubt that it is the effect of treatment, or of some change in the exciting cause.

The next case that occurred to me, which seemed to throw light upon the subject, was the following:—

James C——, aged forty-six, railway-guard on the Great Western Railway, a man in previous good health, met with an accident, in consequence of the slippery state of the rails, which prevented the break from effectually stopping the train, and a slight collision took place. He was thrown forward, and the handle of the break, which is a lever, turning a screw against the force of a strong spring, slipped out of his hand, and the spring forcing the screw back turned the handle with increasing velocity, and it struck him on the side of the head. He was stunned, but after about an hour was sufficiently recovered to be led between two men to a house a mile distant, where he was put to bed. He suffered from concussion of the brain, having no recollection of the accident, or how he got to the house. The accident occurred at Exeter. I did not see him till Dec. 21. He had recovered from all the urgent signs of concussion, and had even taken the charge of a short train to Windsor and back, but was so much affected by the shaking, that the superintendent sent him to me to examine and report. He complained of giddiness and confusion, but no pain, except tenderness where his face had been much bruised; pulse 110; skin very dry and harsh; tongue very red and sore, with no mucus, but not dry; he complained of excessive thirst, and said that his appetite was remarkably good; bowels costive; and on being asked about his urine, he told me that he passed a most extraordinary quantity, and had done so ever since his accident. In fact he passed so large a quantity, that in the cottage where he was residing they could not get vessels enough to contain it till morning, as he filled all the urinals and the washhand-basin. Having obtained a specimen, I found it loaded with sugar; specific gravity, 1·052.

The treatment adopted was to keep him quiet in bed, apply evaporating lotions to the head, the hair cut close, and purgatives. Chloride of mercury, eight grains, and compound extract of colocynth, five grains, immediately; sulphate of magnesia, one drachm; infusion of roses, an ounce and a half, three times a day. His diet was to be milk and farinaceous, with as much water or barley-water as he desired.

At the end of a week (28th December) I saw him again. He was purged by the calomel but not since. He felt better the day following, but still I did not find any improvement, except the urine was rather less in quantity, but it contained a trace of albumen, and he had pain in his loins, and numbness in his legs and thighs, (a common symptom in diabetes, but might be attributable to the brain.) The pulse was 98. I prescribed calomel and compound extract of colocynth, of each five grains, every night, and compound senna draught, every alternate morning; to continue the sulphate of magnesia draught; and blister the head.

On the 2nd of January, he called upon me again, and stated that the medicine purged him considerably, and that something in his head gave a click, when immediately a kind of cloud passed from his mind, and he seemed to wake from a dream. The urine became scanty and high-coloured, specific gravity 1·012, no sugar. He was still purged by the medicine, and felt himself otherwise quite well. The tongue had lost its raw-beefy appearance; pulse 80, and small. Medicine was discontinued, and in a few days he returned to duty. He is now in perfect health.

About the time referred to, I had a case in King's ward, No. 12, Jacob M——. I was induced to use purgatives, and apply the blister to the head, in consequence of the result of the guard's case, and the event was most satisfactory. The man is now in perfect health, passing an ordinary quantity of healthy urine, without a trace of sugar or albumen; moist skin, and cheerful-looking face.

The next case, William A——, aged twenty, No. 14, King's ward, though a young man was not so satisfactory, for he left the hospital to go into Devonshire, still diabetic; but at the time he left, the urine was reduced from about twenty to eleven pints, and the specific gravity reduced from 1·050 to 1·036. The interest of this case consists in its being traceable to an injury to the head, and in the partial relief produced by the blisters and purging; but it must be observed that it was of eighteen months' standing; and the attention must be directed to the improved state of the tongue, diminution of thirst and canine appetite, the restoration of perspiration to the skin, and the improvement in aspect, strength, and cheerfulness.

Another case to which I must refer is now in King's ward, No. 12, who came up from Cheltenham, and had been under treatment for two years before admission. He seems to have derived more benefit from strychnia than any other remedy he had had recourse to; but when admitted, after a blister to the head and a calomel purge, the urine was reduced from twelve quarts to six pints, and the specific gravity from 1·048 to 1·032; but since then the amount has increased to an average of eleven pints, fluctuating two or three more and less, and the specific gravity varies, averaging 1·038.

A case was related to me by Mr. Gibbs, a surgeon at Birmingham, of a manufacturer who applied to him for advice in consequence of his

suffering from diabetes in an aggravated form, with all the most prominent characteristics and symptoms of the complaint. He was kept upon a diet of flesh and porter, and opium was administered for six weeks, without any material alleviation, when he was suddenly seized with an attack of paralysis. A calomel purge, and a blister to the nape of the neck were administered, and he was treated generally for cerebral congestion. The diabetic symptoms suddenly disappeared, he recovered partially from his paralysis, and no sugar has since been traceable in the urine.

These cases individually would prove nothing more than an accidental alleviation of morbid action, which might or might not be connected with the treatment; for the same sudden subsidence of saccharine diuresis might occur at any time, (for anything we know to the contrary, as far as the pathology of diabetes is concerned,) which took place in the first case that I mentioned, where there was no treatment of cerebral disease; and in two other cases the relief was neither sudden nor complete: but taking them in the aggregate, and reasoning upon the probabilities, that the brain was implicated in all these cases as the organ at fault can scarcely admit of a doubt; a conclusion which is confirmed by Bernhard's experiments, whatever may be the explanation of the physiologist as to the particular part played by the liver or the lung in the formation or destruction of the saccharine principle. I should observe that in the case of the guard, and Mr. Blake's case, the relief was sudden and complete, and that in both these cases the disease had not been of long duration. In cases No. 4 and 5, the disease had been in existence a year and a half and two years, and the result is proportionately tedious and incomplete, but still sufficient to indicate the effect of treatment. One point is remarkable, that in every case the action of the skin was restored, so that even the old chronic cases were seen perspiring copiously, and the appetite moderated, though not impaired.—*Lancet June* 24, 1854, *p.* 656.

[Dr. Goolden mentions that saccharine urine without diuresis is very common, and that few cases of chorea and epilepsy in young people occur without showing some sugar in the urine; and even in children who are teething the same occurs.]

Severe cases of neuralgia, especially tic douloureux and sciatica, are often, but not universally, attended with saccharine urine, which disappears when the nervous affection is relieved. The exceptions appear to me to be those cases where the neuralgia is of gouty or rheumatic origin; but of this I am not sure; yet I hope, on still further observation, to form a more certain opinion. I have seen it disappear under the use of quinine in large doses, and opium; and my friend, Dr. Dundas Thompson, to whom I am indebted for much valuable assistance in the laboratory, and for many suggestions, tells me that he has only lately been consulted by a young lady suffering

severely from facial neuralgia. The urine as he suspected, betrayed a considerable amount of sugar; and that both the pain and the saccharine condition of the urine suddenly disappeared after the application of a blister, not to the head, but to the face. This case is important for illustration, because it is given upon the authority of so eminent a practical chemist, and whose analysis would satisfy any one that he could not be mistaken as to the presence of sugar.

A girl, aged thirteen years, No. 23, in Anne's ward, was admitted under my treatment. She was suffering from very severe and constant headache, and likewise from pains in various parts of the body, but without any swelling or tenderness on pressure. There was great disinclination to make any exertion; the pulse 98—120; face flushed; the skin not perspiring; she passed about twenty-four ounces of urine, clear, and of the colour of Madeira wine; it was alkaline, and specific gravity 1·024. The report was that the urine contained no sugar; but observing it to be very ammoniacal immediately after it was voided, I boiled it in the laboratory with a small quantity of pure soda, and then I found an abundant precipitate of orange-yellow on the application of the copper test, and Dr. Thompson confirmed my analysis. A blister to the back part of the head completely removed the headache, the urine ceased to be ammoniacal, and no more sugar was to be detected in it. This patient is the subject of incipient phthisis, and there is much probability that the brain was suffering from strumous congestion, which the blister relieved.

Now the inference I would draw from these few observations is, that the seat of the disease is some portion of the brain, and that the disease itself may be primary, as when produced by injury; or secondary, as when it originates in some strumous or other cachectic condition of the system;—that the sugar is the product of the secondary, not of the primary assimilitive functions; assuming Dr. Prout's definition—viz., "The primary assimilating processes comprise all the processes of digestion, and all the intermediate processes up to sanguinification; while the secondary assimilating processes comprise the the processes by which the different textures of which the living body consists are first formed from the blood, and afterwards redissolved and removed from the system." The appetite and thirst are to be considered as natural indications, to be gratified with prudence, and more with reference to the wants of the system than any fear of increasing either the sugar or the amount of fluid.

Even if the amount of fluid be diminished, and the quantity of sugar in the excretions lessened, through inanition, the advantage is not equivalent (except in particular inflammatory cases) to the effect produced by consequent loss of nutrition to the system; and no possible advantage is gained by a diminution of morbid secretion under such circumstances, since such diminution is no index of improvement. All remedies should have reference to the morbid action taking place in the brain, and not in the stomach, liver, or any other digestive

organ, although we may require to act upon the brain through their agency.

The idea of diabetes being a cerebral disease is so recent that we have no record of autopsies in which cerebral lesion has been observed or looked for; and I have never had an opportunity of examining a brain with that object of search. This subject in future will form an important object for the pathological anatomist.—*Lancet, July* 15, 1854, *p.* 30.

[The connexion of diabetes with an affection of the nervous system is not new, as will be seen from the following:]

"Bernard has shown that the secretion of sugar by the liver is under the direct control of the nervous system. If the pneumogastric nerves be cut in the region of the neck, the production of sugar very soon ceases. If the extremity of the nerves connected with the lungs and liver be artificially irritated, no change occurs; but if the upper extremity be excited, the consequence is a reflex action through the spinal cord, which, following the spinal nerves, reacts upon the liver, and again causes the production of sugar. This influence may be compared with the irritation in the lungs transmitted by the pneumogastric nerves—during the inspiration of chloroform, gas, or ether, for instance—when the amount of sugar produced by the liver is sensibly increased.

"If, instead of irritating the lungs, we puncture the fourth ventricle of the brain or the olivary bodies, an increased action of the liver takes place, producing an excess of sugar, which is excreted by the kidneys. This excessive production of sugar, which can be obtained by an artificial irritation of the lungs, or of the superior extremity of the pneumogastric nerves when cut, or, finally, by the puncturing of the fourth ventricle of the brain and olivary bodies, may also be observed to occur in the human body under certain morbid conditions."

Accordingly, Messrs. Robin and Verdeil consider diabetes to be owing to various affections of the lungs, or perhaps also to some disease of the medulla oblongata.

Some experiments very recently performed by Dr. Harley, at Paris, and communicated to the Société de Biologie, appear to show that the nervous reflex action, upon which depends the secretion of sugar by the liver, is generated in the liver itself, by the stimulating power of the blood of the portal vein upon the hepatic branches of the pneumogastric nerves. Dr. Harley increased the exciting influence of the blood of the vena porta by injecting into that vein alcohol, sulphuric ether, chloroform, or ammonia, and observed, that two or three hours after the operation, the dogs experimented upon voided sugar in their urine, and remained diabetic from two or three hours to two or three days. The presence of sugar in the urine of those animals was detected by means of the double tartrate of potash and copper, and also by fermentation, so that no doubt exists as to Dr. Harley's results.—*Brit. and For. Med. Chir. Rev.—Dub. Hos. Gaz., July* 1, 1854, *p.* 173.

34.—ON THE EMPLOYMENT OF TORULA CEREVISIÆ IN DIABETES MELLITUS.

By Dr. W. Bird Herapath, F.R.S.E.

It has been abundantly shewn, that the morbid product in diabetes is the presence of a saccharine substance in the urine, of a low character, perfectly identical with the sugar of grapes and other analogous fruits. The source of this sugar or glucose has been traced to the mal-assimilation of the starchy or amylaceous element of diet, which substances, as soon as they have entered the stomach of a patient suffering from this disease, are at once converted into glucose. This is as rapidly taken into the current of the circulation by the venous system, and more slowly by the lacteals, and thoracic duct, and is there eliminated by the kidneys, together with an abundant excretion of water. The name of glucosuria has therefore been most appropriately given to the disease.

In healthy digestion it appears probable that starch, although previously converted by the saliva into glucose, is further metamorphosed in the stomach into lactic and acetic acids. The former predominates; hence the amylum of the food is the probable source of most of the lactic acid of the gastric juice; which has been shown by Lehmann to owe its digestive powers in great measure to the presence of hydrochloric and lactic acids.

In diabetes, therefore, it is evident that the conversion of starch stops in the metamorphic series at glucose, a substance highly diuretic and abnormal to healthy blood, and which, appearing to be incapable of undergoing further metamorphosis in the circulating current, and being useless in the production of adipose tissue, and also incapable of subserving to the process of respiration, is eliminated from the system as an effete substance, constituting the most evident sign of the diseased condition of the patient.

Although the quantity of sugar is materially lessened in diabetic cases by the abstraction of all the starchy elements of diet, yet it does not wholly disappear; and some recent experiments point to another source of this morbific matter, but at present we are not in a condition to say more than this, that starch is "*the principal* source of sugar in glucosuria, if not the only one."

We are hence led to the following conclusions: either, 1. That the existence of sugar is an abnormal product in the digestive process; or, 2. That, if produced, it should be merely a transition state to some other proximate element of less stability, and nearer to the ultimate element of its assimilation; either lactic acid on the one hand, or adipose tissue or carbonic acid and water on the other.

We have merely to recollect with what facility certain chemical processes change glucose, and induce it to continue its metamorphic condition. Of all these processes, that by means of certain vegetable agencies appears to be the most suited for the purpose we have in view

—namely, the prevention *of the arrest of the conversion of starch at the stage of sugar*, when undergoing the process of digestion.

It has lately been shewn, too, that certain vegetable organisms have the power, whilst endowed with vitality, of resisting the digestive powers of the stomach. The sarcina ventriculi may be mentioned as a case in point. It therefore easily follows, that the torula cerevisiæ may be presumed to have an efficient action within the stomach, similar to its power of inducing fermentation in saccharine fluids out of the body, if it were capable of resisting the assimilative powers of this viscus for sufficient length of time.

These views led me to employ the torula in diabetes; and I am happy to say, that in the only case in which I have yet had an opportunity of trying this remedy, it answered fully the expectations which I had previously formed of it. Under ordinary circumstances, glucose, at a temperature of 60° to 70° Fah., would be converted into alcohol and carbonic acid by the fermentative agency of torula cerevisiæ or yeast, as is very well known to most persons ; but if the action were to take place in the dark, in the presence of albuminous snbstances or other protein compounds, and at a temperature of 98° Fah., the products would be lactic and acetic acids, with possibly alcohol and carbonic acid,

It is clear, therefore, that the former products would assist in the conversion of the protein compounds, as in the normal state of digestion, and would pass out of the system in combination with some alkaline or earthy base, and be eliminated by the kidneys, skin, or other emunctories ; whilst the alcohol and carbonic acids would act as agreeable vital stimuli, whilst existing in the system, and could eventually escape by the pulmonary mucous membrane, after having perhaps served to assist the respiratory process, being thus converted into carbonic acid and water.

It is known that the yeast-plant, during fermentation, undergoes a progressive growth and decay; and that after long action it becomes spent and exhausted, when it is found that the cells of which it consists have become ruptured, and the vitality destroyed. Presuming, therefore, that the yeast plant became no longer capable of continuing the process of lactic or alcoholic fermentation in the stomach, it would die ; and then would itself become a nutritive nitrogenous substance, like any other article of vegetable diet.

In January 1853, I determined to put these views in practice ; and having a patient then under my care, I commenced the administration of the remedy. Before the treatment, the patient had been voiding urine of specific gravity 1044, and containing 850 grains of sugar in the imperial pint. Within two days of the employment of this substance, the specific gravity sank to 1020, and the sugar to 300 grains per pint. By steadily pursuing the same course during six weeks, the sugar eventually disappeared altogether; the urine assumed its healthy character; and the patient lost all symptoms of his ailment,

regaining his usual health and strength. Since that time, he has rapidly recovered his flesh.

It was exhibited, in this highly satisfactory case, in that form in which it is usually employed by confectioners, and known by them as German yeast. This is prepared on the continent by expressing ordinary yeast in linen bags, by which means all the fluid portions are separated, and a semisolid mass remains, consisting entirely of the active vesicular structure of the plant. This is packed in bladders like lard, and keeps fresh for sometime. Supplies are sent to the London confectioners regularly twice a-week; and it can be always obtained from the trade in any large town, at a very moderate price—about sixteen pence per pound.

The dose given in this case was one tablespoonful twice or three times daily, in milk. It was thus rendered very palatable. At first, the only inconvenience felt was a slight nausea, sometimes passing into actual vomiting, with eructation of carbonic acid probably; by giving the remedy after a meal, these disagreeable symptoms disappeared, and it was then borne very well. It was further serviceable in removing the obstinate constipation which had previously existed, and produced regularity in the alvine evacuations.

As diabetes is a comparatively rare disease in private practice, it is to be hoped that by communicating these results, even in their present incomplete shape, it may be the means of hastening the progress of the inquiry, and thus establish the real value of the remedy, as the attention of numerous experimenters will be called to the investigation, and the causes of success or of occasional failure will be at length ascertained.—*Association Med. Journal, April* 28, 1854, *p.* 374.

35.—ON THE PROGNOSIS AND TREATMENT OF DIABETES.

By Professor Schutzenberger.

The conclusions, &c., drawn by the author are as follows:—

1. Glucosuria is not an incurable disease; if the disposition to relapse cannot be disputed, it is, however, possible, with perseverance, not only to banish the sugar from the urine, but gradually to bring the patient to bear a mixed regimen into which farinaceous matters enter in considerable proportion without causing relapses.

2. The quantity of glucose passed by the patients is sensibly proportional to the quantity of farinaceous matters taken as food, and it is possible to infer departures from the prescribed diet from the increased amount of glucose in the urine. The quantity of urine is perceptibly increased in proportion as a larger bulk of fluid is ingested, and that of the glucose is similarly influenced by an augmented consumption of farinaceous principles.

3. Regimen should incontestibly have a prominent position in the treatment of glucosuria. Milk, fatty matters, butter, oil, eggs, and meat, ought to form the bulk of the patient's food.

4. Total abstinence from farinaceous substances seems necessary to cause a complete disappearance of glucose from the urine.

5. Small quantities of bread (between three and four ounces a day) are generally well borne, and do not cause the reappearance of the sugar in the urine when the glucose has once ceased to be produced.

6. The powers of assimilation gradually increase, and it is possible, by means of chemical analysis, to demonstrate the point at which it is necessary to stop.

7. Regimen is powerfully seconded by certain medicines, and more especially by the use of opium in progressive doses, and of alkaline drinks :—in this disease the tolerance of opium is very great.

8. The glucose is undoubtedly produced in the digestive organs, but it is generally again removed by absorption, so that the solid fæces do not contain a trace of it.

9. Purgatives may diminish the quantity of glucose in the urine by removing with the fæcal matters a greater or less amount which would have been eliminated with that secretion.—*Bulletino delle Scienze Mediche de Bologna. January*, 1854.—*Dublin Quarterly Journal of Med. Science, Aug.*, 1854, *p.* 224.

36.—NEW TEST FOR SUGAR.

By Mr. John Horsley, Cheltenham.

If a freely alkaline solution of chromate of potash be mixed with urine suspected to contain sugar, and boiled, the liquor will assume a deep sap green colour, arising from the decomposition of the chromic acid; the reduced oxide of chromium being held in suspension by the potash. Such is the sensitiveness of this test, that five or six drops of saccharine urine diffused through water is sufficient to show the effect, which is infinitely more striking than even Moore's potass, or Trommer's copper tests.

I would, therefore, recommend a mixture in equal parts of a solution of the neutral chromate of potash and liquor potassæ to be kept in the chemical cabinet of every medical practitioner, labelled—Test for Sugar. When the quantity of sugar is very small, a piece of white paper placed at the back of the test tube will render the colour more distinct.—*Med. Times and Gazette, July* 15, 1854, *p.* 68.

[Dr. Bence Jones and others have raised the question whether any of the other constituents of urine are likely to produce a similar result to that of Mr. Horsley's test. Mr. Horsley thinks not. He thinks his test perfectly unique and reliable. He says :]

Perhaps the most satisfactory mode of showing it, would be in using a white ware evaporating dish to heat the urine in ; then, on adding a sufficiency of the test and boiling, the green colour gradually developes itself, commencing at that part which is most contiguous to the flame, and spreads throughout the mass.

[Mr. Horsley asserts that no other constituent of urine than sugar will interfere with his test. He says :]

In the absence of diabetic urine, the following experiments will suffice to demonstrate the effects :—

Experiment 1.—Having adjusted your apparatus, put into the evaporating dish ten or twelve drops of simple syrup (cane sugar) and dilute it with water. On adding a little of the test, and applying the heat of the spirit lamp, *no change* of colour will be produced.

Experiment 2.—Take another evaporating dish, and having put in the same quantity of simple syrup diluted with water, add two or three drops of acid sulph. dil. and boil for a few minutes. This will convert the cane into grape (diabetic) sugar. If we now add the test and apply heat, the effect becomes apparent in the change of the colour of the liquid to that of an *intense green*, the shade varying with the quantity of sugar contained, as well as the test used.—*Association Med. Journal*, *July* 21, *p.* 653.

[Dr. Day says that Mr. Horsley merely describes a slight modification of Hünefeld's test, as will be seen by referring to 'Simon's Animal Chemistry,' p. 67 of the introduction. In answer to Dr. Day, Mr. Horsley says:]

I have seen Hünefeld's test, which is a solution of chromic acid (Cr O3), and essentially different from that which I have proposed. If a solution of chromic acid, mixed with urine containing sugar, be exposed to the action of the sun's rays, or even diffused light, the liquid will become bistre brown. Every chemist knows that chromic and iodic acids are readily decomposed by organic matter ; therefore, as a test, chromic acid (Cr O3) alone is objectionable ; not so, however, when a binalkalate of the teroxide of chromium (Cr O3 + 2 KO) is used, as then sugar only is acted on in the manner I have stated. On following out my experiments, I find that by using the chromates of potash in different states of oxydation, we have a ready means of discriminating both grape and cane sugar, viz. :—

Test for grape (diabetic) sugar, { Sol. chrom. potass. / Liq. potass.

Test for cane sugar ..... { Sol. bichrom. potass. / Liq. potass.

In each case the liquors assume a deep sap green colour on being boiled, but the effect is not produced with cane sugar unless the solution be of a concentrated and syrupy thickness.—*Med. Times and Gazette*, *July* 29, 1854, *p.* 128.

37.—ON IRRITABLE BLADDER.

By Dr. H. Bence Jones, F.R.S., Physician to St. George's Hospital.

[The bladder is frequently made irritable by different states of the urine and various concretions, but it may be irritable without these

being the primary cause. Dr. Jones gives us some of the most interesting examples of *direct* and of *sympathetic* irritation of this organ.]

The most simple instance of direct irritation may be observed when some irritating liquid substance, as cantharides, turpentine, or copaibæ, exists in the water, or when some solid body, as a calculus, is lying in the bladder. These act as, for example, chlorine or a foreign body, in the bronchial tubes, would do in producing cough. I need not read you examples of irritation thus produced; I may, however, repeat, that simple excess of acid or alkali in the urine alone, rarely by itself, causes irritable bladder, though most decided instances of their effect may be observed.

Here, for instance, is an example of the effect of acidity. I was sent for one evening to a gentleman who was suffering intense abdominal pain, which came on at intervals of a minute, and which he attributed to indigestion. The fits of pain, on reaching to the greatest intensity, relaxed, soon again to recur. With a full dose of calomel and opium, ether, and sal volatile, in three hours this colic subsided; but he began then to complain of scalding and difficulty of passing the water. During the night he had constant calls, passing only a teaspoonful of urine at a time. For this he took nitre, carbonate of potass, and barley-water. The following morning the irritability of the bladder had diminished very much, and during the day it disappeared. On examining the urine made during the time the bladder was so irritable, I found no trace of blood-globules, mucus, or pus-globules, but only a state of very high acidity, which, in twelve hours, gave rise to a very large deposit of uric acid. I believe this excessive irritability of the bladder arose only from the intensely acid state of the urine.

Sometimes, instead of the direct irritant being applied inside the bladder, it acts from the outside. As examples of this, I may mention the irritable bladder of pregnancy, of abdominal tumours, and even of fæces which have accumulated in the bowels. As this last cause not unfrequently occurs, I will mention a remarkable example.

An officer, 60 years of age, complained of much irritation of the bladder. He was disturbed three times each night, and constantly in the day. The urine was healthy; it contained no blood-globules, no albumen, no gravel of any kind, when examined carefully. He stated that his general health was very good, but that he was troubled with very irregular action of his bowels. His usual aperient consisted of a teaspoonful of powder consisting of two parts of sulphur, two magnesia, and one carbonate of soda. I advised some camphor and henbane at night, with cold water enema, and an aloetic aperient. In ten days I saw him again; the bowels were irritable with the aloetic pill; the pint of cold water had been injected each night. For the three nights previous to his visit, he had been disturbed only twice.

After a month I again saw him; he had persevered with the cold-water injection and the pills. He had so much less irritation of the bladder that he considered himself as cured.

[It is very likely that this case depended on the state of the bowel, and the improvement might be owing to their regular evacuation by cold water injections. Dr. Jones next proceeds to consider that direct irritation which depends on idiopathic inflammation, independent of the irritating qualities of the urine.]

Idiopathic inflammation of the bladder is the most common in advancing years, when the prostate gland ceases to be healthy; then some very slight cause is sufficient to determine the commencment of the inflammatory action which gives rise to most urgent symptoms of irritable bladder. Exposure to cold, the fatigues of a journey, inconvenience causing voluntary retention of the urine too long, each of these I have known to be the immediate cause of acute inflammation of the bladder, in consequence of which the water has been passed every hour, and even oftener. At first it is scanty, high-coloured, with blood-globules, and quickly pus-globules are found; and these continue when the inflammation is subsiding, and the frequency and urgency of making water are much lessened. Such an attack I have watched through its whole course; the symptoms rapidly becoming more and more serious, constant hiccup and nausea, producing prostration, which threatened the life of the patient. These symptoms, however, I have seen yielding after treatment; and in two months no trace of blood or pus remained in the urine, and the patient in all respects entirely recovered. More commonly the acute attack passes into chronic disease, and then with more difficulty is removed; or, after months and sometimes years of suffering, the kidneys become affected, and the patient sinks.

[He illustrates this irritability by some very interesting cases, such as by crushing a calculus, cutting for stone, and from a stricture.]

In most cases, as the mucous membrane becomes diseased, the urine gradually becomes so also, and then it also acts on the bladder, greatly increasing the suffering and the difficulty of the cure. Thus the two causes acting together, re-act also on one another. The same result is produced when the irritable bladder is caused at first by the state of the urine alone, as, for example, when it is highly acid or alkaline, then it slowly acts upon the mucous membrane, and finally, both the state of the membrane and the state of the urine together hasten on the disease.

In distinction to these cases of direct irritation, there are others which I may class together under the head of sympathetic irritation, in which apparently neither the urine nor the mucous membrane of the bladder are perceptibly different from the healthy state.

The most frequent cause of this sympathetic irritation is probably disease of the kidney itself, although it is by no means the fact, that in all diseases of the kidney irritation of the bladder is produced. Most commonly the irritation occurs when some calculus or inflammatory action exists in the pelvis of the kidney; then a small quantity

of purulent matter mixed with the urine may indeed pass into the bladder, but this usually bears no proportion to the amount of irritation which occurs. The first explanation of this irritation that presents itself is that the inflammation extends down the ureter to the bladder; but on *post mortem* examination this cannot usually be proved, and hence these cases must be classed under the head of sympathetic, and not of direct irritation. The following case will show the relief which in this state may sometimes be obtained:—A gentleman, aged 58, consulted me for irritable bladder. He said that he was usually disturbed eighteen times at night, and some nights not less than twenty-four times. He had suffered thus for four months, and, to a less degree, for three years. Three months previous to my seeing him he was examined for stone and prostatic disease, and neither was found. Long since, on one occasion, he passed some blood. The left loin was tender on pressure; the left testicle was enlarged. The urine was highly acid, and contained pus and albumen, and doubtful blood globules. I advised the use of ten grains of extract of henbane, and ten grains of soap and opium pill as a suppository each night.

I saw him again six months afterwards. He said that the suppository had given him immediate relief. The frequency was soon reduced to seven times, and sometimes to six times nightly. The quantity passed each time was under two ounces. The urine was strongly acid, and some infusoria were perceptible immediately after the water was passed. He had used the suppository with benefit every night, but he considered that it caused dryness of his mouth, and obliged him to take three times as much castor-oil as he used to take. He finds that when the oil does not act on the bowels he passes his water much more frequently than he otherwise would do. From the albumen, blood, and pus, with the tenderness in the left loin, it is probable that in this case the left kidney was affected; and from the acidity of the urine, after the disease had been so protracted, it is probable that the irritation of the bladder was sympathetic. Sometimes instead of the suppository great relief may be obtained by means of an opium injection, but the radical cure must depend on the removal of the cause, and when this is not possible, then palliative treatment may become the means of prolonging life. Hysterical irritation of the bladder belongs to the class of cases of which I am now speaking. In all supposed hysterical diseases, the first thought should be, whether the hysteria is the cause or the consequence of the disease. Is the hysteria idiopathic or symptomatic? Often it will be found that hysteria is but one symptom of a complaint, which, in addition to other effects, produces irritable bladder; but occasionally no other complaint can be detected, and no cause for the irritable bladder can be found except the hysteria itself. The previous history will often assist in giving the true answer to the question which you must ask before you can commence your treatment on reasonable grounds.

Moreover, whatever may be the cause of the irritable bladder, yet in all cases, whether of direct or sympathetic irritation, both in men and in women, a smaller or a greater part of the irritability may be always traced to nervousness. This is usually seen in the fact, that in such patients a passing thought will suddenly cause the most urgent desire to empty the bladder, and that while the mind is fully occupied, the irritability will be less distressing. Occasionally not even a passing thought is required, but a recurrence of the circumstances which had on some former occasion preceded the desire to pass the water will be followed by the same effect. Thus, one patient told me that he never could enter his own house without an immediate desire to pass his water, and this desire would become urgent even while his mind was fully occupied with some engrossing subject. Another patient told me, that whenever he went into his dressing-room, it mattered not for what cause or how soon after he had passed his water, immediately on entering the apartment the desire occurred. Another, who seldom could retain the water for an hour when he had an opportunity for passing it, could remain for two hours in church without inconvenience. I am often told, "I could remain in church or elsewhere for two hours without any inconvenience, provided the thought of the impossibility of making water did not occur; but the moment it occurs I am compelled to retire." These instances are sufficient to show how irritable bladder may become a habit. In children we admit this without difficulty; but in adults, where there is also disease, it is more difficult to determine the amount of effect that belongs to each cause. I have known the habit caused by the pressure of pregnancy to last afterwards, and to become a constant annoyance. In young persons, it may be sometimes observed that no remedy is sufficient to overcome the habit, and it is broken only when feelings of shame become most powerful; while in the old I have frequently seen the loss of all feeling of shame fix the bad habit and render it more irresistible.

In irritable bladder, more perhaps than in most diseases, it is requisite that, before any method of treatment is begun, you should endeavour to obtain clearness as to the cause of the disease. It is produced by so many different causes, that specific treatment of the irritation will rarely suffice. You may palliate it as you would a cough by opiates and sedatives; but to effect a cure the cause of the disease must be found, and be capable of removal. Ask yourselves, then, first, Is the irritation direct or sympathetic; if the former, is it simple or compound, internal or external. While endeavouring to remove the cause, you will often find palliatives of great importance. Of these the most important are camphor and opium. Three grains of camphor and half a grain of opium made into a pill taken twice or three times daily, will often prove beneficial. In some cases, palliatives fail, and cure is impossible. In these, mechanical contrivances of the present day do away with much of the discomfort and annoyance which otherwise would have to be endured.—*Med. Times & Gaz., June* 3, 1854, *p.* 561.

38.—ON RETENTION AND SUPPRESSION OF URINE.

By Dr. H. Bence Jones, F.R.S., &c.

[Retention and suppression of urine are sometimes of great value as means of diagnosis. Dr. Bence Jones subdivides stoppage of the urine according to the place at which the stoppage occurs :]

Thus we shall have—1st. Stoppage in the urethra. 2nd. Stoppage in the bladder. 3rd. Stoppage in the ureter and pelvis of the kidney. 4th. Stoppage in the secretory structure of the kidney.

1st. Stoppage in the Urethra.—Stricture of the orifice is occasionally met with by the surgeon : on this I shall not dwell. Rarely I have known a calculus so firmly fixed that it could not escape, and filling the orifice so that the urine could not pass. In one case, the slightest surgical treatment liberated the calculus. In another, the gradual dilatation by the fluid behind effected a spontaneous cure. In women stricture of the orifice, or rather, I should say, of the urethra, I have known to occur from prolapsus uteri, as in the following case :—A patient, fifty years of age, was admitted into a surgeon's-ward, with excessive prolapsus. It had lasted for many years, had gradually increased, and, on admission, there was great external protrusion, and considerable inflammation of the womb. She had been in a state of muttering delirium for some days, and was excessively emaciated, and in a state of great weakness ; her delirium increased, the brown tongue never improved, she became perfectly comatose, and died a week after her admission. On examination, the bladder was enormously dilated, the ureters were both much enlarged, the mammary processes of the kidneys were gone, and the calices of the kidneys encroached on the secreting structure. The mucous membrane throughout was inflamed.

2. I pass on, secondly, to partial or complete stoppage of the urine in the bladder.

The most usual cause of partial obstruction at the neck of the bladder is prostatic enlargement. A patient comes to you complaining of inability to retain his water. He says, that at night it passes in his sleep. He is advancing in life, and, on inquiry, you find that the stream of water has long lost the force with which it used to be expelled. If you examine the water, it may be feebly acid, neutral, or alkaline. It usually contains pus, and often some blood-globules ; there is usually no pain at any time anywhere.

From such a history you may safely conclude that the bladder is not emptied ; but that there is partial retention of urine ; that the urine which remains behind in the bladder decomposes, and makes that which is passed neutral or ammoniacal, according to the degree of decomposition. Gradually the mucous membrane becomes more and more inflamed, and then the change in the reaction of the water is greater, it becomes more purulent, and ultimately, though it may be very gradually, the patient is worn out by the irritation and discharge of

purulent matter from the bladder, or, if the inflammation spreads to the kidney, he dies comatose.

By the careful and constant use of the gum catheter these evils may be avoided; and I have known a medical man thus keep off diseaes from himself for twenty years by the use of the catheter night and morning daily.

The frequency of the use of the catheter in retention of urine in the bladder, from this or other causes, must be determined by the reaction of the urine. The object to be obtained is to prevent the ammoniacal urine from increasing the inflammation of the bladder. If the urine can be kept neutral or acid by drawing off the water once daily the object will be attained; but if, after drawing off the water at night, that which is passed in the morning is found alkaline, it is evident that that which remains behind in the bladder must continue during the day to act injuriously on the bladder until it is drawn off again at night. The object of drawing off the water is not merely to empty the bladder, but to take away the alkaline urine which is irritating the mucous membrane; and the sooner it is taken away after it is formed the less will the membrane be irritated.

If, then the morning or mid-day water be alkaline, the catheter should be used twice a-day. Without this, medicines are useless; with it, they often are scarcely required.

If the passing of the catheter also becomes a cause of irritation, then the least of the two evils must be endured.

A partial retention of urine, giving rise to exactly the same results, sometimes is caused, not by obstruction at the neck of the bladder, but by chronic inflammation of the bladder itself, from gonorrhœa or other causes. The lymph effused in the submucous and muscular coats prevents contraction and consequent expulsion of all the urine, and thus the train of effects I have just described may be produced.

I have known inflammation of the peritoneum give rise to adhesions between the bladder and bowels, and thus also the contraction of the bladder has been stopped. Malignant disease, outside or inside the bladder, will sometimes also prevent the expulsion of the urine, and thus cause a partial retention, which will be speedily followed by putrefaction.

In addition to these causes of partial retention of urine in the bladder, there are still other causes which deserve notice.

A medical man came to me saying that something was wrong with his water, for he had only passed three or four ounces the day previously, and that he felt no desire to pass it. He was, he said, in good health, and never had anything the matter with his bladder. An instrument was passed after he had made what he could, and it was found that above a pint of water was retained in the bladder. It was alkaline, purulent, and contained blood-globules. No disease of the prostate could be found, and the inability to empty the bladder probably depended on a loss of contractile power of the muscular coat.

This loss had slowly increased, and was unperceived until it had reached a most notable degree. In this case the use of the catheter was determined by the state of alkalescence of the urine. I have heard of other cases in which the gradual distension of the bladder by urine has caused a temporary loss of power of the muscular coat of the bladder, and, unperceived, a large fluctuating tumour of the abdomen has resulted, and when the catheter has been introduced, no urine has flowed until pressure has been made on the body ; then two quarts of fluid have been drawn off.

[3. Dr. Jones next proceeds to stoppage in the ureter and pelvis of the kidney. It may occur in any part of this canal, though the more common is where the upper part of the ureter loses the funnel shape, which is a continuation of the pelvis of the kidney. The other most frequent point is at the entrance of the ureter into the bladder.]

There can be little doubt that a calculus may obstruct the ureter, and produce dilatation of the kidney and ulceration of the constricting portion of the ureter, and then passing into the bladder, the ulcer may contract and leave the ureter almost or altogether impervious. A patient was admitted into St. George's Hospital, with fracture of the lower articulating extremity of the tibia. He was able to walk until the ninth day after the accident, when shivering came on followed by much constitutional disturbance, and he rapidly sank. The day previous to his death, he, for the first time, felt inability to void his urine, which was drawn off by a catheter. On examination, after death, it was discovered that one of the kidneys was destroyed, by pressure, and was converted into a number of membranous dilatations, and contained two quarts of urine. On attempting to pass a probe down the ureter, it was found to be almost impervious, so as hardly to admit a bristle. The opposite kidney and the bladder were sound.

The inability to pass the urine the day before his death was probably quite unconnected with the disease of the kidney, at least the same thing occurs in cases in which the kidneys are perfectly healthy. For example, a gentleman who was gradually worn out with attacks of obstruction of the bowels, consequent on stricture of the upper part of the descending colon, which produced fæcal abscess, was generally able to pass his water without difficulty. He was excessively wasted and enfeebled, but apparently not more ill than for some days previous, when, on trying to pass his water, he found himself unable to do so. The urine was drawn off in the evening. He was restless during the early part of the night ; towards morning a change occurred, and he died in the afternoon. No urine was passed from the time it was was drawn off on the day previous till the time of his death. The kidneys were both healthy.

4. On Stoppage in the Secreting Structure of the Kidney.—Suppression of Urine.—Many cases are called cases of suppression of

urine which have no right to this title. I have frequently been told of cases of suppression of urine in which no catheter was ever passed to certify the absence of urine from the bladder. Nay, I have even been told that a patient laboured under suppression of urine because no water was passed, and none could be drawn off by the catheter, and yet, a few minutes afterwards, a more skilful surgeon has drawn off some pints of water.

In the treatment of retention and suppression of urine, our first thoughts must be directed to the cause of the disease. The obstruction must be overcome ; the congestion must be diminished ; the inflammation must be subdued. When nothing else remains to be done, we must endeavour, by acting strongly on the bowels by hydragogues, and on the skin by sudorifics, to relieve the poisoned system, and thus, at least, to obtain more time for the action of these antiphlogistic remedies which give the greatest hope of recovery.—*Med. Times and Gazette, June* 10, 1854, *p.* 587.

39.—*On Irritability of the Bladder.* By Henry Thompson, Esq., Honorary Surgeon to the Marylebone Infirmary.—[A sort of rheumatic affection sometimes follows gonorrhœa, which is accompanied by frequent micturition but not of an inflammatory character. The general health may be depreciated. It may be benefited by iodide of potassium and tonics, such as cinchona combined with Plummer's pill. Sometimes colchicum and blue pill, and at other times guaiacum will be very serviceable. Ten grains of guaiacum powdered with an equal dose of magnesia may be given once or twice a day.

In other cases an irritable state of the bladder may be associated with diseased prostate gland. On this Mr. Thompson says:]

Frequent micturition is sometimes associated with an affection of the prostate, or more properly speaking, of the urethra as it passes through that gland, when the symptom occurs in youth, or at an early adult age. Thus, after an habitual inordinate indulgence of venereal appetites, sometimes after repeated attacks of gonorrhœa, or quite as commonly after one attack only in certain constitutions which manifest undue excitability of the urinary apparatus, and in which, catarrhal discharges generally are very obstinate and hard to cure, the patient complains of vesical irritability, attended or not, with some gleety discharge. On passing a middle-sized catheter, no organic narrowing is discovered, but there is extreme sensibility of the canal, after the instrument has traversed some five or six inches of the anterior part. Acute cutting pain is then complained of as it is carried onwards to the bladder. The catheter may be tightly grasped, and is not to be removed without some pain. Perhaps it is not possible to say what is the exact condition of the urethra here; probably there is some vascular congestion, or subacute inflammatory

action existing in the mucous membrane, analogous to that met with elsewhere. This, however, we know, that in four cases out of five, the passing of a catheter, repeated at two or three days intervals, for a short time, almost entirely removes the hypersensibility. The muscular constituents of the canal are perhaps stimulated to contract by the presence of the foreign body, the enlarged or relaxed capillaries thus emptied of their contents gradually return to their normal size, and the congestion ceases to exist.

Thus it happens that on the first or second time of using the instrument, some slight bleeding may occur, which appears to have a beneficial effect rather than otherwise, and it rarely takes place afterwards. The actual presence of the pathological state described, is, in most instances, a matter of conjecture only it must be confessed, but there is a strong probability that it may not unfrequently be affirmed. Now sometimes it seems to happen that this affection, when much neglected, or if marked by more than usual severity, may implicate the neck of the bladder also to a greater or less extent, and set up considerable irritability of this organ. Such a condition, as might naturally be expected, is aggravated by the stimulating diuretics frequently employed, which contain some volatile or acrid principle, such as buchu, copaiba, &c. I have met with several cases notably illustrating these remarks. In this complication, also, if there be no purulent discharge with the urine, which is sometimes the case, I have found the benefit of passing instruments into the bladder, beginning, say with No. 7 or 8, and passing on to 10, 11, or 12. But if these fail, or if there is some little purulent discharge, an application of the nitrate of silver to the prostatic portion of the urethra and neck of the bladder is exceedingly useful as a curative means. Sometimes the whole bladder is advantageously injected with solutions of the nitrate; it is, I believe, however, generally sufficient to cauterize the parts indicated. Nevertheless, there are conditions of the vesical mucous membrane in which such injection is highly beneficial. When the neck of the bladder has thus become affected, the urine may be decidedly albuminous, and yet no serious renal disease may co-exist. It would then seem to be a result of irritation, secondary to, and depending upon, the condition of the bladder; for on remedying this, the albumen disappears. In such a case, the absence of the constitutional signs of organic disease of the kidney, and the non-appearance of diseased epithelium or casts in the urine, will leave the observer to watch closely for the source of the albuminous product, and perhaps to connect it with some functional, and not with any organic derangement.

We meet with vesical irritability, accompanied by more or less of mucus in the urine, or muco-purulent deposit, in which, no evidence of inflammatory action being present, we cannot feel justified in regarding it as a condition of cystitis, although it is often, but not necessarily always, a sequel of it. It seems to be due rather to an atonic or relaxed condition of the mucous membrane, in which the

phenomena described occur, and in which much distress from the frequent calls to pass urine is experienced, but which will not be combated successfully by any antiphlogistic treatment. It is for this class of cases especially that stimulating injections for the bladder are so useful. Among them may be mentioned the nitrate of silver, in the proportion of half a grain to two grains to the ounce of water. The strength, however, may be greatly increased, even to ten or fifteen grains for some cases. Another useful formula is half a grain to a grain of the acetate of lead, with two grains of the extract of opium, to the ounce of water. The nitric acid is particularly indicated when the urine is charged with the earthy phosphates, and may be added to water in the proportion of one or two minims to the fluid ounce. Creosote and copaiba have both been employed by continental surgeons in these circumstances; the former in the proportion of one minim, the latter in that of thirty to sixty minims, to the ounce of fluid; but I have no experience of the effect of these. Plain warm water is often of great service in most cases where much mucus is present, and it may then be advantageously injected once or twice a day. The employment of a continuous stream by means of the double-current catheter with a free opening for the transit of mucus, is best adapted for the purpose. When there is much pain, as well as irritability, the extract of opium may be added to the water; but, generally speaking, a sedative effect is much more efficiently obtained by the use of a suppository. When the contents of the bladder are extremely offensive, a weak solution of chloride of soda is sometimes of considerable value as an injection. It may be repeated every day. The strength to be employed should range between six and ten minims to the ounce of tepid water. In the operation of injecting the bladder, instead of fixing the nozzle of the syringe directly upon the catheter itself, it conduces greatly to the comfort of the patient to connect the two by means of a pliable or elastic tube, so that no impetus be transferred to the sensitive organ from the hand employed in propelling the fluid. The vulcanized India-rubber bottle, fitted with pipes and valves, like those of the ordinary enema apparatus, is very preferable to the syringe for this purpose, because it can be worked by the operator with one hand only, leaving the other free to adjust the catheter or turn the stop-cock. With regard to internal remedies, the alkalies before alluded to, provided the urine is not already alkaline, as a general but not invariable rule, or the mineral acids if it be strongly so, combined with the infusions of diosma or buchu, or of the uva ursi, with full doses of hyoscyamus or of camphor, and sometimes with copaiba or chios turpentine, appear to be the most efficient in non-inflammatory conditions of the bladder. The tinctures of iron and hyoscyamus together, or of iron and hop, sometimes exercise marked benefit in weak and anæmiated subjects. From decoction of the pareira brava, in doses of the ordinary Pharmacopœia strength, and also when augmented greatly beyound that standard, I have been disappointed

in obtaining the good results attributed to its use, and in cases which have been apparently adapted for it. We have the highest authority, however, for its value in some circumstances.—*Lancet, June* 3, 1854, *p.* 594.

40.—*Treatment of a Nephritic attack from Calculus in the Kidney.* By Dr. H. Bence Jones.—[When a stone has formed in the kidney, four things may take place,—1. It may remain on the pelvis of the kidney and cause but little irritation. 2. The symptoms may be generally slight, but occasionally severe. 3. It may pass out of the pelvis, and cause obstruction in the ureter. 4. It may pass downwards into the bladder.]

The treatment of a nephritic attack consists in relieving pain and preventing inflammation. While the calculus is quiet in the pelvis of the kidney, but little can or need be done. That little consists, 1st in hindering the increase of the concretion in the kidney, by correcting the unhealthy state of the urine by diet and medicine, according as acid, alkali, or oxalate of lime, predominate; and, 2ndly, in hindering inflammation in the pelvis of the kidney by avoiding severe exercise. I have frequently known patients advised to take strong exercise, but it is not during exercise that the calculus usually quits the kidney for the ureter. Most commonly I am told by patients that, in turning in bed at night, they were suddenly seized with the nephritic symptoms.

The first object must be to allay the pain. The hottest hip-bath, at the temperature of 110° or 112° Fahr.; chloroform externally and internally; opium: the injection of warm water into the rectum,—by these the first indications of relieving pain may be fulfilled.

The second object is to guard against inflammation; this is effected by general or local bleeding, by aperients, sudorifics, and purgatives.

The complaints which may be mistaken for a nephritic attack are lumbago and colic. I know of no certain means of distinguishing these diseases except the microscopic examination of the urine. The absence of vomiting in lumbago, and the seat of pain in colic, may lead you to a correct opinion; but the presence of blood-globules when the urine is examined with the microscope, is the sure indication that the attack is caused by the descent of a renal calculus, and the affection of the testicle may be generally found confirmatory of this opinion. Do not think that in every case in which blood is found by the microscope in the urine a calculus necessarily exists in the kidney. Blood globules may appear in the urine from simple congestion of the kidney in many diseases,—from Bright's disease, from inflammation of the mucous membrane alone, from congestion or disease of the prostate from scrofulous disease, or malignant disease; and, in some of these diseases the difficulty of distinguishing between them and renal calculus is by no means easy.—*Med. Times Gazette, May* 27, 1854, *p.* 533.

41.—ON MALIGNANT AND SCROFULOUS RENAL DISEASE.

By Dr. H. Bence Jones, F.R.S.

[Renal diseases are often very difficult of diagnosis. We ask ourselves first, perhaps, whether it be Bright's disease; next whether any concretion be present, or whether inflammatory action exist; and, lastly we ask whether the case be one of malignant or scrofulous disease Neither malignant nor scrofulous disease admits of easy relief, and, therefore, the medical attendant should be careful in giving his prognosis. In the following remarks we find some valuable information on two things; first, some of the difficulties of diagnosis in malignant and scrofulous affections: and, secondly, on the palliatives which are mostly beneficial.]

A medical man from the country applied to me in consequence of the occasional passage of blood in the urine after exercise. He complained of some pain in the loins; he was easily fatigued; spoke of his fear lest he should be obliged to give up his profession. He looked worn, and the urine contained oxalate of lime crystals, and blood globules. I was unable to detect any other disease. There was a very small quantity of albumen in the urine. The pulse was 100.

From the occurrence of blood after exercise, from the oxalate of lime crystals, and from the fact that, after the most careful examination, I could find no proof of any disease of the kidney, I conjecture that a renal calculus existed. I saw no more of this patient. The *post mortem*, which occurred months afterwards, was thus reported :— Left kidney about the size of two fists; extremely hard, and infiltrated throughout with opaque, white, solid encephaloid matter. Right kidney healthy. Great enlargement of the lymphatic glands in front of the spine and at the upper part of the abdomen. Liver enlarged and studded throughout its whole extent with masses of encephaloid matter, varying in size from that of a pea to that of a pullet's egg. Lungs studded throughout with small, opaque, hard, white masses, from the size of a pea to that of an almond. Portions of the liver, lung, kidney, and lymphatic glands, when examined under the microscope, all showed the same encephaloid deposit.

In this case, then, no appearance indicating malignant disease was found during life in the urine; nor, though he was seen by many, was the true nature of the case known until after death.

A mechanic, aged 37, was sent to me with a statement that he was suffering from malignant disease of the kidney. The diagnosis was founded on the microscopic appearances of the urine. He first passed blood in quantity a year before I saw him; then a little blood was passed when he finished making water. He had some pain in the left lumbar region. On examination of the urine, I could find only a few blood globules, and very considerable quantity of oxalate of lime. I could find no proof of malignant disease. Six months after this, I again saw him. He had had another slight attack, but otherwise had

been much better. I could not, on this occasion, find any proof of malignant disease. I again saw him a year afterwards, when he told me his medical man had changed his opinion regarding the existence of malignant disease in consequence of his improvement. For the last year I have had no account of this patient.

In this case, probably, the microscopic appearances misled the observer in the diagnosis; for the apparent recovery of the patient was altogether opposed to the assumption of malignant disease. The error, which I mention only to show the difficulties that exist, was of the opposite kind to that mentioned in the first and following case.

T. A., aged 45, was admitted into St. George's Hospital under my care, April 16, 1851. He stated, that in August, without any cause, blood first appeared in the urine. He had pain in the right side, under the ribs, and in the loins. He was leeched, and that relieved the pain; but it never entirely left him. Since then, the blood has passed at variable intervals; but while resting for three months he passed none. For the month before his admission he passed it more frequently, and for the last two days the urine has not been free from blood, the urethra being at times blocked up by the coagula. There has been no pain or retraction of the testicle; but he has had severe pain in the right groin, and in the inside of the thigh. The urine, when it was free from blood, was free, plentiful, and clear. The bowels were regular. In two days, with perfect rest and gallic acid, the blood disappeared. After some days it returned, and was increased after a fit of coughing. The gallic acid was increased, but the blood increased rather than diminished. An infusion of matico, after two days, again stopped the blood; it recurred after some days, and was again stopped by matico. He remained rather improving until the 4th of June, when he was made an out-patient. When the water was clearest and freest from blood, the microscope always detected some blood-globules, some oxalate of lime; no pus-globules, and no other remarkable appearance. There was always some albumen in the urine. I saw nothing of him until the 3rd of February, 1852, when he said, that since he went out of the hospital he had had blood in the urine occasionally, about once in six weeks at first, then at longer intervals; now the blood comes very rarely, but the pain in the loins has been increasing. It is a heavy, aching pain in right loin, with numbness down the inside of the thigh not so far as the knee. There is no retraction of the testicle. Is obliged, on account of the pain, to keep from work. Standing, even for less than hour, brings on the pain. He thinks himself very well in other ways. The urine still contained blood-globules and oxalate of lime.

In November, 1852, he came to me suffering with most intense neuralgia of the face and back of the head. With difficulty it was relieved by quinine. He had the same pain as before in the loins, but no blood that he knew of in the urine.

On the 19th of December, 1853, I was requested to go to him for most violent hæmoptysis. He was breathing with the greatest difficulty, and bringing up florid blood in considerable quantity. He was pulseless, and with difficulty able to speak. The following day he died.

On examination by Mr. Prescott Hewitt, the right kidney was larger than natural, and was of a globular shape. It was converted into a mass of encephaloid disease, in which all traces of the structure of the kidney were lost. The pelvis of this organ, much dilated, was also filled with encephaloid deposit, which extended far down the ureter, and blocked up its cavity to within two or three inches of the bladder. This encephaloid deposit was, for the greater part, formed of a firm structure of a fawn colour; but in some parts it was of a reddish tinge, and broke down readily. The other kidney and the bladder were healthy. No cause for the hemorrhage was found in the lungs, which were healthy. The heart was also healthy.

In this case, microscopic examination of the urine, repeated frequently, gave no indication of the malignant disease. The occurrence of the blood when no exercise was taken, made me suspect scrofulous disease rather than calculus; but in this also I was mistaken.

Sometimes no urinary symptoms whatever are observed, the malignant disease existing in another more vital part, causing the renal disease to be entirely overlooked.

Sometimes another urinary disease exists at the same time, and thus the symptoms are made obscure. Thus granular disease of the kidney may exist with encephaloid disease, and the secondary symptoms produced by the former may alone force themselves on the attention.

As far as I have hitherto observed, then, the microscope has not enabled me certainly to predict the presence of malignant disease of the kidney. I must say the same of incipient malignant disease of the bladder. The symptoms of this disease are more distressing than when the kidney is affected; but even when I have felt confident of my diagnosis, I have sometimes been unable to confirm it by the microscopic discovery of malignant cells, in consequence of the highly alkaline urine acting on the cells. In other cases, in which small masses of malignant matter were passed, the microscope has confirmed the diagnosis which the general symptoms had made most probable. Nor has the microscope, as yet, enabled me to speak certainly regarding the commencement of scrofulous disease. The means of distinguishing between scrofulous disease and calculus of the bladder or kidneys, are very insufficient; but by careful attention to the progress of the symptoms, more certainty may be attained than by help of the microscope.

In conclusion, then, as no certain microscopic or chemical test exists for the early stage of scrofulous and malignant disease, it will be best, in doubtful cases, to refuse to give a positive opinion. Suspend your diagnosis until, by carefully watching the progress of the case, you find sufficient evidence of the nature of the disease. Thus, your diagnosis

will remain uncorrected, and your prognosis will be sure.—*Med. Times and Gazette, June* 17, 1854, *p.* 613.

42.—*On the Development of Vibrio Ureola, Bodo Urinaris, &c., in Urine.* By. Dr. Arthur H. Hassall.—[The following are the conclusions which Dr. Hassall arrives at in his interesting paper:]

1. That vibriones are not developed in strongly acid urines so long as these retain their decided acidity.

2. That so soon as such urines have lost a considerable part of their acidity, and have become but feebly acid, vibriones begin then to appear. It is thus that the occurrence of both torulæ and vibriones in the same urine is explained. While the urine is strongly acid the torulæ are formed, but as soon as the acidity becomes greatly reduced, the vibriones make their appearance.

3. That vibriones are invariably developed in different proportions in all those urines which are either feebly acid, neutral, or more particularly alkaline.

4. That the greatest development of vibriones takes place in all those urines which contain most animal matter, as mucus, epithelium, and albumen, and which, at the same time, are decidedly alkaline. Hence, although not an exact test of the degree of alkalinity of any one sample of urine, or of the amount of animal matter (especially albumen) present, yet by their early appearance, and by the quantity developed, to a certain extent vibriones may be regarded as affording valuable information on both these heads.

5. The vibriones are freely developed when the urine is exposed to the air.

But vibriones are not the only kind of animalculæ found in urine. A second species not unfrequently occurs in great abundance, entirely different in size, form, and structure; this is the bodo urinarius. The author gave a minute description of this animalcule, showing that they multiplied by *fissiparous* reproduction. Some carefully executed drawings illustrated the characters of this animalcule. The author's investigations had led him to the discovery of a third kind of fungus developed in alkaline urine, entirely different from the two which had been described in a former communication. Like them this recently discovered fungus presented three distinct stages of growth—sporules, thallus, and aerial or perfect fructification. These were severally described. The author abstained from giving this fungus a distinctive name, wishing, before doing so, to ascertain whether it had heretofore been described by any other observer.—*Lancet, July* 8, 1854, *p.* 10.

43.—*The Elimination of Urea.*—In the 13th volume of the 'Archives Gen. de Médecine,' 4th series, will be found an interesting communication by Bernard and Barriswil, on the elimination of urea from the blood after extirpation of the kidneys. It appeared to them

a singular circumstance that whenever the kidneys of an animal had been extirpated, a period of time, varying from twenty-four to forty-eight hours, always elapsed before the blood yielded on analysis any traces of urea ; and it immediately became a question in what way the urea escaped from the system during this interval. To ascertain this point, a series of experiments on dogs was instituted. The kidneys of these animals were first extirpated, and the blood and intestinal contents were subsequently carefully tested. Two of the dogs perished quickly after the mutilation, one from peritonitis, and the other from suffocation. In neither of these could any urea be detected in the blood. The gastric fluids liberated, on the addition of caustic potash, a suffocating ammoniacal odour ; the intestinal fluid and bile, when similarly treated, disengaged also large quantities of ammonia. In the other experiments, the animals survived longer, and died, finally, in a state of considerable exhaustion. It was observed, in these instances, that the gastric juice was much increased in quantity, and was secreted without intermission both fasting and during digestion. Large quantities of ammoniacal vapour were liberated from it by the addition of caustic potash. No urea could be detected in the blood till the animal had become weak and exhausted, and the quantity of gastric juice secreted had undergone a considerable diminution in consequence.

Bernard and Barreswil conclude, from these experiments, that after the kidneys of an animal have been extirpated, the urea is eliminated by the secretions of the intestinal tube, and chiefly by the gastric juice, in the form of an ammoniacal salt ; and that no urea can be detected in the blood till, from progressive diminution of the vital powers, the intestinal fluids become more and more diminished in quantity, and thus the supplementary channels for the separation of urea are cut off. Retention of urea, they argue, is not a direct result of suppression of urine, but rather a consequence of the loss of vigour which follows it ; for if the vital powers remain active, the urea escapes from the blood by other portals, when those provided for its natural elimination are closed. True it is, that in no instance was urea, as such, detected in the intestinal contents ; but this circumstance is accounted for by the authors, on the supposition that it is decomposed by the acid of the stomach, and transformed into lactate or phosphate of ammonia, and in proof of this, they state that urea, when introduced into the stomach, is always changed into a salt of ammonia before it can be absorbed.—*Dublin Hospital Gazette, July* 1, 1854, *p.* 171.

44.—ON A NEW AND SIMPLE METHOD OF DETERMINING THE AMOUNT OF UREA IN THE URINARY SECRETION.

By Dr. Edmund W. Davy, Lecturer on Chemistry, Dublin.

Urea has long been regarded with much interest by scientific men, on account of its physiological and chemical relations.

It represents one of the last stages of a series of metamorphoses or changes, which nitrogenous matter undergoes in the animal economy, and is the form under which the detritus of pre-existing nitrogenous tissues, which have become effete, principally passes from the system.

This interesting organic base, urea, is not only formed during the exercise of the vital functions in man, and some of the higher animals, but is also produced during the chemical decomposition of a number of substances containing nitrogen; and the chemist can now obtain it in any quantity by artificial means, and thus imitate one of the most important results of the chemistry of life.

In reference to medicine, urea is not without some practical interest, as it is well known that during various diseased conditions of the system the quantity of urea eliminated from the blood by the action of the kidneys, and excreted in the urine, is occasionally subject to great variation; and some ready means of ascertaining its quantity in that secretion might frequently aid the physician in forming his diagnosis of certain diseases.

Different means of effecting this object have, from time to time, been proposed; but all the methods hitherto recommended, with perhaps the exception of Baron Liebig's recent one, require for their execution much time and trouble, and in some cases complicated and expensive apparatus, and though capable, in experienced hands, of yielding tolerably accurate results, would, in the case of those not much practised in chemical manipulation, and perhaps unaware of the many sources of error to be guarded against, give anything but correct results; and, therefore, inapplicable to the greater number of those desirous of a quick and easy method of determining the amount of urea in urine.

The method I propose is one of extreme simplicity, and can be performed by almost any one in a very few minutes, and is capable of yielding results sufficiently accurate for all practical purposes.

It is founded on the fact I have recently observed, that urea is very readily decomposed by the chlorides or rather hyperchlorites of soda, potash, or lime, and that its constituent nitrogen is evolved in the gaseous state, and from the quantity of gas evolved I estimate the amount of urea present.

After trying different means of carrying out this fact, with a view of making it available to determine the quantity of urea in urine, I found that the following very simple one seemed to answer the purpose completely.

I take a glass tube, about twelve or fifteen inches long, closed at one end, and its open extremity ground smooth, and having the bore not larger than the thumb can conveniently cover. This I fill more than a third full of mercury, and afterwards pour in carefully a measured quantity of urine to be examined. which may be from a quarter of a drachm to a drachm, or upwards, according to the capacity of the tube; then, holding the tube in one hand, near its open extremity,

and having the thumb in readiness to cover the aperture, I quickly fill it completely full with a solution of the hypochlorite of soda (taking care not to overflow the tube), and then instantly cover the opening with the thumb tightly, and having rapidly inverted the tube once or twice to mix the urine with the hypochlorite, I finally open the tube under a saturated solution of common salt in water, contained in a steady cup or small mortar. The mercury then flows out, and the solution of salt takes its place, and the mixture of urine and hypochlorite being lighter than the solution of salt, will remain in the upper part of the tube, and will therefore be prevented from descending and mixing with the fluid in the cup. A rapid disengagement of minute globules of gas soon takes place in the mixture in the upper part of the tube, and the gas is there retained and collected.

The tube is then left in the upright position, till there is no further appearance of minute globules of gas being formed; the time being dependent on the strength of the hypochlorite and the quantity of urea present; but the decomposition is generally completed in from three to four hours. It may, however, be left much longer, even for a day, if convenient, and having set the experiment going, it requires no further attention; and when the decomposition is completed, it is only necessary to measure the quantity of gas produced, by transferring it into a graduated tube or measure.

I have generally used a graduated tube in the first instance, as it saves the trouble of transferring the gas, and incurring the risk of losing some of it in the process.

That which I would recommend as being convenient for this purpose, is a stout tube having a bore of half an inch in diameter, and capable of holding from two to three cubic inches. A tube having this bore, and about fourteen inches in length, will hold two-and-a-half cubic inches, which will be quite large enough. Each cubic inch of it should be divided into tenths and hundredths of a part of a cubic inch. It is scarcely necessary to remark, that in cases where great accuracy is required, due attention must be paid to the temperature and atmospheric pressure, and certain corrections made if these should deviate from the usual standards at the time of reading off the volume of the gas; but in most cases, sufficiently near approximations to accuracy may be obtained without reference to these particulars.

From a number of experiments I have ascertained that the quantity of gas evolved from different amounts of urea (treated in the way I have described) very closely approximates to the quantity of nitrogen gas which should be furnished from the urea by calculation.

This will be seen from the following experiments taken from many:—

The fifth part of a grain of urea should furnish by calculation, 0.3098 parts of a cubic inch of nitrogen gas, at 60° Fahr. and 30′ Bar.; the same quantity of urea, treated, as described, furnished in one experiment, 0.3001, and in another, 0.3069 parts of a cubic inch of

gas, at the same temperature and pressure, which shows that the calculated quantity of nitrogen differs from the amount of nitrogen gas obtained by only a few thousandths of a part of a cubic inch. I may observe, that I was obliged to operate on such small quantities of urea, on account of the graduated tube I had at the time being only of one cubic inch capacity. Seeing, then, that the quantity of gas evolved agrees so very closely with the calculated amount of nitrogen present in a certain quantity of urea, I take the calculated amount as being the more correct, and knowing the relation that exists between a certain quantity of urea and nitrogen, I can, from the quantity of gas evolved in any case, easily calculate the amount of urea present, by the simple process of rule of three.

Thus, the fifth part of a grain, or 0.2, of a grain of urea gives, by calculation, 9.3098 parts of a cubic inch of gas. Then, 0.3098 : the volume of gas found : : 0.2 : to the required quantity of urea, or multiplying the first and third terms by five, we have 1.549 cubic inch of gas representing 1. grain of urea, which is a simpler proportion. Using this data, I made several comparative experiments on different samples of urine, with my method and that of Baron Liebig's, which I believe is considered one of the most accurate of the methods of determining urea in urine at present known.

The following are the results of three comparative experiments on different samples of urine, using the same with each method :—

	Amount of urea in grains and parts of a grain in one fluid ounce of urine.		
	Liebig's.		*New Method.*
First	3.680	...	3.712
Second	5.328	...	5.472
Third.....	4.976	...	4.976

In the first and second experiments the quantity of common salt present in the urine was taken into account, as it is found to increase to a slight extent the apparent quantity of urea in the urine by Liebig's method ; in the third this was not taken into consideration, and the quantity of urea was compared with the mean of two results obtained by my method.

These experiments show how very closely the results obtained by the new method agree with those of Baron Liebig's, and therefore show the correctness of the former method. I prefer the hypochlorite of soda to that of potash as a decomposing agent, because the soda salt is an article of our pharmacopœia, under the name of "Sodæ Chlorinatæ Liquor," and therefore can be so easily procured, whereas the potash salt, not being used in medicine, would require to be specially made for this purpose. As to the hypochlorite of lime, I do not think t so effectual, and it has the disadvantage of soiling the sides of the graduated tube by the carbonate of lime formed in the reaction. In reference to the quantity of hypochlorite of soda to be used, it should always be employed in excess, and I think that about five or six times

the volume of urine employed would be found generally to be quite sufficient, and ensure there being an excess.

The amount to be used may be easily determined by direct experiment, by adding to a certain quantity of urine to be examined, in a small glass, a measured quantity of the hypochlorite, and leaving it for a short time till the evolution of gas is nearly over; then if, on the addition of more of the hypochlorite, the effervescence is renewed, it shows that there was not enough of the decomposing liquor first employed, and more must be added till there is no further evolution of gas produced, and the quantity of hypochlorite which is required to arrive at this point, indicates the amount necessary. I found by experiment that one grain of urea requires somewhere about half a fluid ounce of the ordinary sodæ chlorinatæ liquor for its complete decomposition.

The amount of mercury employed requires some little attention; it should, as a general rule, be never less than the volume of gas evolved, for if the volume of gas produced is more than that of the mercury employed, it will be more than that of the solution of salt, and therefore some of the mixture of urine and the hypochlorite will be forced out of the tube before it is completely decomposed, and consequently some of the gas will be lost; so that if this occurs we must repeat the experiment, using either a larger quantity of mercury, if our tube will allow, or diminishing the quantity of urine employed. It might be supposed on first sight, that this method would be liable to the following source of error, viz.:—that some of the gas would be evolved and lost during the pouring in of the hypochlorite; but this is not the case, as several seconds elapse before there is any apparent reaction or evolution of gas on mixing the hypochlorite with the urine, and therefore giving full time to perform the experiment without loss of any gas.

I have, also, ascertained that the ordinary acid reaction of the urine does not affect my method.

I should observe, that this new method, like all the others known, is not perfectly free from some slight sources of error; the principal one being, that ammonia, if it exists in the urine, gives rise to nitrogen, and therefore, increases the apparent amount of urea. But the same objection holds equally in Liebig's and Ragsky's method, which are, perhaps, the two most accurate at present known. Uric acid, also, is similarly affected by the hypochlorite, but it and ammonia ordinarily occur in such small proportion in urine, that the error produced would be but trifling, and is partly corrected by taking the calculated quantity of nitrogen, which is, as I have shown, something more than that derived from a certain quantity of urea by direct experiment.

In cases where ammonia or uric acid occurs in more than ordinary quantity, these substances must be separated by the usual means employed, before having recourse to my method.

I should think that gently heating the urine with a certain quantity of baryta water, as long as the odour of ammonia is disengaged, and then filtering the solution, as recommended by Liebig, for the separation of ammonia before applying his method (see the 'Journal of the Chemical Society,' vol. vi. page 30) would effect the object very easily, and separate not only the ammonia, but, also, the greater part if not all of the uric acid present.

There is one other source of error which may arise, and which can easily be avoided; it is the following: that if a solution of hypochlorite of soda, alone, or standing over mercury, be exposed to the light for several days, it will very gradually evolve a very minute quantity of oxygen. So that the experiment in determining urea should not be carried on for too long a time, but a day, or even two, will scarcely make any appreciable effect on the quantity of gas evolved in testing for urea.

The reaction which appears to take place in the process seems to be the following: the hypochlorite of soda reacting on the urea gives rise to nitrogen, water, carbonic acid and chloride of sodium:—

$$\text{Thus, } \underset{\text{Urea.}}{C_2 H_4 N_2 O_2} + \underset{\text{3 Hypochlorite Soda.}}{3\,(ClO \cdot NaO)}$$
$$= N_2 + 2\,CO_2 + 4\,HO + 3\,Cl\,.\,Na.$$

The nitrogen is evolved and the carbonic acid is absorbed by some of the hypochlorite of soda in excess, for I find that this salt absorbs carbonic acid very quickly, without evolving any other gas, and I have failed in several experiments to detect the smallest portion of carbonic acid gas in the gas produced by acting on urea, though I have always noticed the presence of a very minute quantity of oxygen in the nitrogen.

These appear from my experiments to be the changes produced; but this part of the subject I have not as yet minutely examined, and my experiments have hitherto been made on healthy urine; but I have ascertained that several of the substances found in urine during disease, as, for example, sugar, albumen, bile, and excess of urinary colouring matter, produce scarcely any effect on the results obtained by this new method of determining the quantity of urea in the urinary secretion.—*Dub. Hosp. Gazette, June* 1, 1854, *p.* 134.

SURGERY.

AFFECTIONS OF BONES AND JOINTS, AMPUTATIONS, &c.

45.—SYMPTOMS AND TREATMENT OF SOME PRINCIPAL DISEASES OF JOINTS.

By Wm. Coulson, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson having described the general morbid anatomy of articular disease, proceeds to the symptoms and treatment. Amongst the occasional causes of joint disease, he mentions one which is not sufficiently attended to, and which is particularly pointed out by M. Tessier, of the Hôtel Dieu, of Lyons, viz., that prolonged immobility of a joint may not only aggravate existing disease, but produce various lesions in a joint which had been previously healthy.]

This fact was ascertained by examining the joints of persons who had been confined to bed in a fixed position for a great length of time for fracture. In such cases, M. Tessier very frequently observed the following morbid appearances :—In all the joints of the affected limb, the synovia was replaced by an effusion of bloody serum, and sometimes of fluid blood. The same effusion existed in the soft parts of the joints, and in the peri-articular tissues. There was passive congestion of the synovial membrane, most visible in the folds or fringes which it forms in some joints, or in the more advanced stages, actual formation of false membranes, injected with vessels and adherent to the cartilages. These latter were often involved ; their surfaces presented a partial or uniform injection, with more or less destruction of substance, which varied considerably in different cases. Sometimes the articular surface of the cartilage was merely rough, and had lost its polished appearance ; in others it was absorbed superficially, in others again, it was softened, deeply eroded, or evidently ulcerated, with bright injection of the cartilage around the ulcerated spots. These are examples of the well-known fact that mere suspension of a function for any considerable time may give rise to alterations of structure, and they lead to the practical inference that the immobility recommended in the treatment of diseases of the joints cannot be prolonged beyond a certain period without danger, for perfect rest alone during five or six months is sufficient to cause absorption or ulceration of the cartilages.

[Mr. Coulson adopts the ordinary classification of diseases of joints, viz., those attacking the *membranes*, the *cartilages*, and the *bones*. He then proceeds to say :]

Inflammation of the proper capsule of the joints is termed synovitis, and the synovial membrane may, like other tissues, be the seat of acute or chronic inflammation. In addition to this, the inflammation may be common or specific ; it may present the ordinary characters of inflammation in analogous tissues, or it may be modified by the gouty, the rheumatic, and the scrofulous diathesis. Finally, it may be connected with gonorrhœa, or be one of the symptoms of the general and dangerous affection depending on purulent infection of the blood. Here, then, are no less than seven or eight varieties of the same disease in a single elementary tissue—viz., the synovial membrane.

Common inflammation of this tissue, as I have said, may be acute or chronic. The acute form is generally attended with well-marked symptoms which render its diagnosis easy. It occurs more frequently amongst adults than at any other period of life, and can often be traced to the influence of the gouty or rheumatic diathesis. Rheumatism, I believe, is the predisposing cause in a great majority of cases, and exposure to cold the exciting cause. The characteristic signs of acute synovitis are generally fever, severe pain and uniform swelling of the joint with a sense of fluctuation, occurring in such quick succession that they seem to be almost simultaneous. If very acute, the inflammation is ushered in by rigors and high inflammatory fever. There is, at the same time, more or less severe pain in the joint, which, if superficial, feels hot, and is evidently enlarged. The pain will vary according to the severity of the attack ; it soon becomes acute, even intolerable, when the capsule is much distended by fluid. Hence pressure on the joint excites great suffering, which is moreover aggravated by the slightest movement of the affected parts. The swelling arises from distension of the synovial membrane by fluid effused within its cavity. It often occurs within a few hours after the commencement of the inflammation, but its appearances may be modified by several circumstances. Thus the swelling cannot be perfectly distinguished, unless the joint be superficial, and the quantity of effused fluid considerable. In such cases the swelling assumes the form of the synovial membrane, and fluctuation can easily be detected. The natural structure of the joint and surrounding parts will, however, tend to alter the uniform appearance which the enlargement would otherwise assume ; it has a tendency to manifest itself over those parts of the joint where less resistance is offered ; but on this point I need not repeat what I have already said when speaking of abscess and the examination of joints during disease. The sense of fluctuation, generally distinct at first, may soon be rendered obscure by effusion of lymph into the cavity of the joint, thickening of the synovial membrane, or effusion into the peri-articular tissues with œdematous swelling of the more superficial parts. During the pro-

gress of the disease some symptoms worthy of notice may occur. The synovial bursæ in the neighbourhood of the affected joints may become implicated. This is often observed during acute inflammation of the shoulder-joint, and gives rise to a sense of crepitation. In some other cases the crepitation seems to depend on change of quality in the synovial fluid secreted. But the symptoms which require closest attention are those which indicate that the inflammatory action has given rise to secretion of pus within the joint. This is usually indicated by a well-marked aggravation of the inflammatory symptoms—severe rigors, high fever, increase of pain, throbbing, starting of the limb, &c. The swelling also increases, but it is impossible to distinguish that caused by purulent effusion from other forms by the sense of touch alone; we must infer the presence of suppuration from the constitutional symptoms just mentioned.

Acute synovitis may run the usual course of common inflammation in other parts of the body, and terminate in resolution. Some weeks generally elapse before this favourable termination takes place. The chance of its occurrence will be modified by the nature of the fluids effused into the joint. Serum is readily absorbed, but if coagulable lymph has been deposited in the synovial membrane and periarticular tissues, the joint will remain stiff for a long time; the disease is liable to recur, and chronic inflammation with ultimate destruction of the joint may be the consequence. Secondary luxations of the femur and tibia have sometimes been observed during this stage of the complaint, in consequence of relaxation or destruction of the ligaments, together with muscular action, and an unfavourable position of the limb. If pus has been secreted the prognosis is still more unfavourable. Purulent collections, the result of acute synovitis, have little or no tendency to find their way into inter-muscular tissue. The reason of this is, that acute articular inflammation is generally attended by an effusion of lymph in the cellular substance and other tissues around the joint, by which the pus is prevented from forming sinuses; it works its way directly from the joint to the surface, but the cartilages become softened and ulcerated. Anchylosis is the most favourable result that can be expected, but amputation often becomes necessary.

Chronic synovitis may be regarded as an effect or rather continuation of the acute disease just described, for it is highly probable that the low forms of inflammation which constitute primary chronic synovitis (hydrops articuli excepted) are connected with scrofula or some other constitutional affection. Under this view of the subject it is unnecessary to say much about chronic synovitis. The physical signs are the same as those already described, but diminished in degree. The joint is stiff and swollen; its motions are limited and painful; there is always more or less swelling, but this is firm, not attended by a sense of fluctuation, and never presenting the smooth, round appearance of the tumour in acute synovitis. There are little or no febrile symptoms, but every now and then an exacerbation is liable to take place, and the disease to assume more of the acute form.

We should have, however, a very imperfect and limited notion of chronic synovitis if we confined ourselves to the species just alluded to. Inflammation of the synovial membrane, assuming from the outset a chronic form, and depending on some constitutional derangement, presents itself under very different characters, and is of a more serious nature.

Gouty and rheumatic inflammations of the joints are sometimes acute, often chronic. To describe them in a complete manner it would be necessary to pass in review the general history of the two diseases with which they are connected. I shall therefore omit them here, and pass to a description of chronic synovitis in scrofulous patients.

Considerable discussion has taken place between writers on diseases of the joints, relative to the particular tissue affected in scrofulous affections of these parts. Some, as Sir B. Brodie, locate the disease in the cancellous tissue of the ends of the bones; others are of opinion that it begins in, and is for a long time confined to, the synovial membrane. From my own experience, I am inclined to think that scrofulous disease may commence in any one of the elementary tissues composing a joint; that it may remain confined for some time to the tissue in which it originated, but that, generally speaking, it has a tendency to pass in a gradual manner from one tissue to another until the whole joint, membranes, bones, and cartilages become involved. Scrofulous synovitis is sometimes described under the name of gelatinous degeneration of the synovial membrane. It is of frequent occurrence in some joints—the knee, for example, where it assumes a slow and very insidious form from the commencement. In the earliest stage the appearance of the membrane differs little from that of one attacked by a slight degree of common inflammation; it is partially injected and somewhat thickened at the inflamed points; soon afterwards it begins to soften from the deposit of scrofulous lymph, and is then gradually converted, as the disease progresses, into a pulpy, gelatinous layer of a pale-yellow colour, somewhat resembling that of infiltrated tubercle. According to some authors, the colour is often whitish or light grey; it is certainly more or less mixed with red in many cases, and it is probable that the appearances and consistency of the membrane will depend on the degree of orginization which may have taken place in the imperfect lymph effused on the synovial membrane and into its sub-synovial tissue.

The symptoms of chronic scrofulous synovitis are at first sight obscure, for the disease generally commences in a very insidious manner. It attacks persons under the age of puberty more frequently than adults, and is in a great majority of cases accompanied by the general signs of the scrofulous diathesis. Some slight impediment to the free motion of the joint is often the first symptom observed, and this may continue for weeks or even months, occasionally accompanied by uneasiness or slight pain in the joint before the next symptom—

viz., swelling—attracts any attention. This is always indolent, and drogresses in a gradual manner. It does not appear to depend on any considerable accumulation of fluid in the joint, for it is not accompanied by any sense of true fluctuation; it has a doughy, elastic feel, and at first assumes the form and limits of the synovial membrane, giving a rounded appearance to the knee-joint, where the progress of the swelling can be observed with facility. When the synovial membrane has undergone pulpy degeneration, and any quantity of the imperfect plastic matter peculiar to scrofula has been effused into the joint, the tumour projects on either side of the articulation, and has a soft doughy feel, which may be mistaken for fluctuation. The skin over the swelling is pale, not much distended, and preserves its natural temperature. It is only at a later stage, when abscess has formed within the joints, that the integuments become implicated. The patient is free from general disturbance beyond what may be attributed to his constitutional state; there is no symptom of fever, in a word; and the local inflammation is betrayed by no other symptoms than obscure pain and gradual swelling. Scrofulous synovitis, however, has a great tendency to pass into suppuration, or more frequently still into the formation of those soft imperfect masses which some call "scrofulous false membranes," &c., and which compose a great portion of the tumours denominated white swellings.

In a few cases the inflammation assumes a more active character, and some coagulable lymph is effused on the surface of the membrane, but even then we do not find adhesion taking place between the opposite surfaces. After the disease has continued for an uncertain period, some attempt at reaction may be set up, and suppuration ensue, or pus may be effused into the cavity of the joint with very slight aggravation of the general symptoms. In other cases ulceration of the cartilages takes place, either under the influence of the altered membrane, or of the suppurative inflammation, and the distinctive characters of the disease become merged in those of a general affection of the joint.—*Lancet, April* 29, 1854, *p.* 465.

[In inflammation of joints, the particular tissue involved can only be known in the superficial joints. When in the synovial membrane the swelling occurs very early, and is more considerable than when in the extremity of the bone. Ulceration of the cartilages and suppuration take place much sooner when the synovial membrane is affected than when the disease has commenced in the bone. Gonorrhœal rheumatism often rather confounds our diagnosis.]

The indications of treatment, in inflammation of the synovial membrane, will be chiefly regulated by the acute or chronic nature of the disease, and by a consideration of the constitutional influence under which it may have been developed. The synovial is a delicate membrane, its functions are quickly impaired by disease, and its close connexion with the cartilaginous portions of the joint favours the exten-

sion of inflammatory action from the membranous to the solid tissues of the articulation; hence acute inflammation of a common kind must be combated from the outset with active and decided measures. If the patient be strong, and the general inflammatory symptoms run high, blood should be taken from the system. Copious venesection at an early stage will have a beneficial effect in checking the tendency to the effusion of organizable lymph, on the presence of which many of the secondary changes depend. In less severe cases, the local abstraction of blood by leeches or cupping, in the vicinity of the affected joint, will suffice. This must be repeated according to the circumstances of each case, which will also regulate the number of leeches to be applied; but, as a general rule, it may be laid down that the number should be considerable. The leeches are commonly applied immediately over the affected joint; the severity of the pain may render it necessary to apply the cupping-glasses rather above the inflamed articulation than on it. Warm fomentations should be frequently employed; they relieve distension and assuage pain, being usually composed of a decoction of poppy-heads. When, however, the pain is excessive, I can recommend a remedy, the use of which is attended by no danger, while its effects are really striking. This is the chlorinated hydrochloric ether, a compound somewhat resembling chloroform. A piece of lint, moistened with twenty to forty drops of this ether, may be placed on the joint, and its influence in dissipating pain is scarcely less than that of chloroform itself. I have seen cases in which the severest pains of acute rheumatism have been alleviated by it in a few minutes.

After sufficient extraction of blood, the means most to be relied on, is the administration of calomel and opium, so as to bring the system rapidly under the influence of mercury. This method of treatment has been adopted in consequence of the well-known influence which mercury exercises on serous inflammations, and when properly applied in cases of healthy synovitis it is highly efficacious. Still you must be perfectly satisfied that the inflammation is not developed under the influence of any diathesis, and, above all, is unconnected with a scrofulous habit. In such cases the general antiphlogistic treatment must be modified according to the constitutional disposition of the patient. Should any doubt exist as to the propriety of employing mercury, tartarized antimony may be had recourse to; but generally speaking the acute inflammatory symptoms will be sufficiently subdued by copious local bleeding, fomentations, and saline antimonial remedies; in a word, by the ordinary antiphlogistic treatment, with the principles of which you are all familiar.

Absolute repose of the affected joint is an indispensable condition of treatment, without which the most active remedies will fail to produce a beneficial effect. You must therefore pay early attention to this point, endeavouring to place the articulation in the most favourable position, and there maintain it as immovably as possible. This will

require experience, practical skill, and a perfect acquaintance, not only with the anatomy of the joint, but with the effect produced by various positions of the pelvis, and by the action of muscles attached near the articular extremities of the bones. Hence it is evident that each joint will require a particular position, and special artificial means for securing it in a state of repose. I cannot, however, now lay down anything beyond a few general rules. It is commonly said that the patient instinctively assumes the most favourable position for the limb. This is an error. Instinct takes nothing into consideration beyond pain, but the surgeon has to look further, and regard the possible terminations of the disease, together with the influence which different positions of the articular extremities of bones may exercise on the inflamed tissues within the joint. If you examine the positions naturally assumed by patients labouring under articular disease, you will invariably find that they have a tendency to keep the inflamed joint in a flexed position. This may be the easiest one, but in the knee-joint, for example, it is evident that strong flexion promotes in a remarkable manner the tendency of the tibia to be luxated backwards.

A good position in articular disease should comprehend several circumstances. It should not give rise to distension of any part of the capsule ; it should not cause one part of the articular surface to press against another ; it should not favour the occurrence of secondary luxation ; and, finally, it should be one most likely to render the limb useful, in case of anchylosis. Attention to these several points will enable you to select the best position for the limb in each case, after which various mechanical means may be employed to ensure complete repose. During the early stage of acute synovitis the pain is so severe that no artificial restraint can be tolerated. You must therefore gently place the limb in what you consider to be a favourable position, and endeavour to keep it motionless by securing it on pillows carefully arranged.

With rest and antiphlogistic remedies the violence of the disease will soon be subdued ; it becomes more or less chronic, and our main object is now directed towards promoting the absorption of any extraneous matters which may have been effused into the cavity of the joint. In fulfilling this indication great care must be taken not to induce a recurrence of the inflammatory action by too hasty efforts to dissipate its effects. The most useful remedies are gentle friction, moderate and careful compression, stimulating applications, and blisters. During this period of the treatment perfect immobility of the affected joint may be ensured by the employment of mechanical means. Almost every surgeon has his favourite method. Some trust to pillows and bandages ; but these are never sufficient to ensure perfect repose, and should therefore be rejected ; others employ the common fracture-splints ; others, again, recommend special apparatus manufactured by our instrument-makers. In general practice you cannot always procure these ; but you can always get some pieces of thick

leather: soften these in warm water, mould them when pliable on the limb, remove them when hard, line them with wash-leather, and you will have a very serviceable splint, which, with proper bandages, will keep the joint immovable. The use of the splints may be continued as long as you have reason to think that any trace of inflammatory action remains in the joint, but no longer. After five or six weeks it would be dangerous to employ them. I have already pointed out to you the changes which result from prolonged immobility of a joint, and hence gentle motion must be resumed as soon as the articulation appears in a condition to bear it. At first this may be effected by the hands of the surgeon, who will combine it with friction and what has been called shampooing; afterwards the patient will be encouraged to make such gentle efforts as he can bear without pain. Especial attention nust be given during this part of the treatment; for, as I have observed before, injudicious and hasty attempts to accelerate the cure may have an opposite effect, and cause a return of the complaint.

Notwithstanding all our efforts, acute synovitis will sometimes terminate in suppuration. The symptoms of this state have been described, and I may add that it is generally much more easy to recognise the occurrence of acute articular abscess than of those chronic collections which take place in unhealthy subjects, and are accompanied by considerable tumefaction or thickening of the periarticular tissues. Should any doubt exist, a preliminary exploration may be made with a grooved needle; and if it be found that the fluid contained in the joint is pus, the question immediately arises—should we leave the case to nature, or should we evacuate the contents of the joint by incision? Surgeons are not agreed upon this point, and it must be confessed that much may be said on both sides of the question. For my own part, I am in favour of a free and early evacuation of the purulent collection, after which the treatment must be continued according to the general principles of surgery.

Chronic synovitis, as I have said, may be of a simple kind, or it may be connected with some constitutional peculiarity or diathesis. The treatment must be modified accordingly. Simple chronic inflammation of the synovial membrane is generally a continuation or sequence of some acute attack, and is to be combated by the usual antiphlogistic remedies, due attention being paid to the stage of the disease and the condition of the patient. The previous treatment will probably have dissipated any prominent inflammatory symptoms, and the local abstraction of blood is seldom indicated, unless the recurrence of pain, swelling, &c., shows that an exacerbation of the chronic state has taken place. In such case we must have recourse to moderate local depletion. The main object, however, is to promote the absorption of such materials as may have been deposited in the tissues of the joint during the stage of active inflammation, while at the same time we disperse any remnant of inflammatory congestion that may be lurking in the parts. The persevering use of counter-irritation is the

means on which our chief reliance is to be placed. This is a point on which all surgeons are agreed, and it is also admitted that blisters are the best form in which the counter-irritation can be employed in the first instance. The blister may be of such a size as to cover the whole surface of a superficial joint, but many prefer applying it close to rather than immediately on the affected articulation. By healing the blister immediately, and employing a second or third one, if judged necessary, we obtain a much better effect than if the blister were kept open by an irritating ointment.

The blisters should be followed by the use of stimulating applications to the surface of the joint. These are of various kinds. Some surgeons recommend us to paint the joint over with tincture of iodine, but it has seemed to me that this application rather exercises a peculiar influence on the tissue to which it is immediately applied, than a remote action as a counter-irritant. Frictions with tartar emetic ointment have also been recommended. This remedy, however, is not very manageable; it sometimes produces troublesome sores; and for pustular stimulation I would prefer the croton-oil embrocation, with which any desired amount of counter-irritation can be produced. It is almost unnecessary to repeat that, during the whole of this time, the strictest repose must be ensured by the means already mentioned.

When the employment of local bleeding, followed by counter-irritation, and seconded by absolute rest of the limb, has had the effect of completely subduing inflammatory action, we have recourse to another order of remedies. The object now is to stimulate the absorbent vessels, and promote the removal of any adventitious material which may have been deposited in the tissues of the joint or around it. Various means are employed for this purpose. When the swelling is not very firm, and we have reason to conclude that the effused products of inflammation have not been considerably organized, common stimulant embrocations, or a discutient plaster, composed of equal parts of galbanum and mercurial plaster, may be used with advantage. In more advanced cases, pressure either by means of a bandage or strips of adhesive plaster may prove useful, but the most efficacious means, I believe, of restoring to the joint the greatest degree of motion of which it is capable, are methodical friction and cold douche. The friction should be exercised with the hand over the whole surface of the joint, which is at the same time to be cautiously moved and pressed in different directions somewhat after the manner employed in shampooing. This may be repeated for half an hour daily, or at certain intervals according to circumstances.

During the use of local remedies, your attention will not be diverted from the general condition of the patient, which must be carefully studied, and any indications arising from it promptly fulfilled. This is in accordance with the remark which I have already made, that articular diseases are very often dependent on some general derangement of the health, or, as Mr. Abernethy would have expressed it, that

the local complaint has a constitutional origin. Each constitutional taint, whether it be syphilitic, rheumatic, scrofulous, &c., will require its peculiar general treatment to be directed according to the principles established by medical experience.

But as I have only described in the present lecture, gonorrhœal and scrofulous synovitis, I shall confine what I have to say on this point, to these two varieties of synovial inflammation. Gonorrhœal rheumatism is a very peculiar disease, its precise nature is not yet clearly established, nor have we yet arrived at any very satisfactory method of treating it, for all surgeons who have had the opportunity of observing this form of synovitis, are agreed that it is remarkably intractable. The local inflammatory symptoms must of course be met by appropriate antiphologistic treatment, but the constitutional remedies which should be employed, have not been so clearly determined. Sir Benjamin Brodie says that in the great majority of cases the disease must run its course, and that all that can be done, either by the surgeon or the patient, is to guard against the operation of those causes which might tend to aggravate or renew the symptoms. He has found colchicum combined with saline medicines, in the early stage, and the iodide of potassium in more advanced stages, the remedies from which the greatest benefit is derived. Some surgeons advocate the use of anti-gonorrhœal remedies after leeching, &c., and, even give large doses of copaiba, while M. Velpeau and others, prefer a mixture of cubebs and copaiba. A few rapid cures have been obtained by this treatment, but generally speaking, it does not seem to have been very successful. Many of the German surgeons, influenced by the old theory of the identity between gonorrhœal and syphilitic poisons, employ Zittman's decoction, which is a solution of bichloride of mercury in decoction of sarsaparilla.

In the treatment of chronic scrofulous synovitis, great judgment and perseverance are required. The local remedies are the same as those already recommended for ordinary cases. The abstraction of blood by leeches &c. is not often required, and its effect on the general health must be carefully watched. When the inflammatory symptoms have been completely subdued, recourse will be had to counter-irritants, friction, and the combination of pressure with moderate irritation, popularly known under the term of "Scott's dressing." From the nature of the disease, and the constitutional peculiarities of those affected by it, there is always some danger of the joint being more or less injured by organic changes; hence great attention should be paid to the position in which it is placed during the period of absolute repose, and if you have reason to fear that anchylosis must ultimately ensue, you will take special care to give the limb such a position as shall render it serviceable after the recovery of the patient. In all scrofulous affections of the joints, local remedies would produce little effect, without constitutional treatment.—*Lancet, May* 6, 1854, *p.* 487.

In some cases, the whole or certain portions of a cartilage are hypertrophied, without any obvious change in its texture. This is a rare affection; it seldom exists alone, but is generally connected with, and in all probability dependent on another change—namely, softening of the cartilaginous tissue. When this occurs, the texture of the cartilage is pulpy, the cells are enlarged or have burst, and the matrix is of a dark colour, containing a number of cells or nuclei.

In old people, especially in those who have led laborious lives or been subject to rheumatism, we sometimes find an opposite condition of the cartilage. It is atrophied, or more or less removed by interstitial absorption, without breach of surface. The cartilage may be removed in patches, or the change may involve its whole surface, gradually thinning it until the entire cartilaginous end of the bone has disappeared.

Ulceration of the cartilage is, however, the disease which most interests us as surgeons, and to this frequent form of articular affection I shall now direct your attention. When disease, no matter of what nature, has continued for any length of time in a joint, the cartilages are extremely liable to become involved, but the affection of which I now speak, is a primary one, commencing in the tissue of the cartilage itself, or at all events commencing at a very early period of co-existing diseases, and for some time confined to the tissue in which it has had its origin. Primary ulceration of cartilage may be acute or chronic; it may also be common or specific, that is to say, connected with some constitutional taint, as scrofula. The appearances of the ulcerated parts are extremely various, and this may be explained if we admit, what is probably the fact, that ulceration of cartilaginous textures is not an ulcerative process in the true sense of the word, but a destruction, and disintegration of the tissues of a peculiar kind, and mainly depending on altered states of nutrition. However this may be, the ulcerated surface—for I must continue to employ the generally-received term—is sometimes a limited depression, giving the appearance as if a piece of the cartilage had been scooped out with some sharp instrument. In other cases we have small, round, and irregular excavated spots of ulceration, either on the surface, or in the substance of the cartilage; while in still more severe forms, the whole cartilage seems to be rapidly removed without any further changes than those described at the commencement of the lecture.

Primary ulceration of the cartilage most frequently commences on the free surface; it may also begin in the substance of the cartilage, or according to Sir B. Brodie, on the surface by which the cartilage is in contact with the bone, but it may admit of doubt, whether in these last cases, the ulceration is not sometimes a secondary effect of some disease in the bone itself. Acute ulceration of the articular cartilages is a formidable disease. It is difficult to say how far it may be a primary affection, for it is always attended by synovial inflammation, or disease of the bones and soft parts. The most rapid forms are

those seen to accompany purulent effusions into the joints from infection of the blood, when the whole of the cartilaginous surfaces of a large joint are sometimes destroyed in three or four days.

Simple chronic destruction of the articular cartilage is the form under which this affection usually presents itself to the surgeon. According to Sir B. Brodie, it occurs more frequently at the middle and later periods of life than in children. Its causes are obscure. Sir B. Brodie, having observed that primary ulceration of the cartilages is often preceded by pains like those of rheumatism in other parts of the body, is inclined to connect it with the rheumatic diathesis. It is sometimes connected with the scrofulous diathesis, and it may possibly be excited in some cases by mechanical injury. Numerous joints are sometimes affected in the same individual, while at other times the disease may be confined to a single joint, or even to a particular portion of a single cartilage. It is a curious fact, but one well established by numerous post-mortem examinations, that ulcerative destruction, both on the surface and in the centre of cartilage, may have been going on for a considerable time, and to a great extent, without giving rise to any symptom whatever. I am, indeed, inclined to think that the symptoms of primary destruction of cartilage are generally obscure, and that many of those which we are in the habit of attributing to it rather depend on disease of some other tissue, commencing at the same time with, or very soon after, the mischief in the cartilage.

Pain is one of the earliest symptoms which announce ulceration of cartilage. At first, it is of a dull kind, and deep seated, giving rise to a disinclination to motion ; and this dull, deep pain may continue for weeks without any other change, the joint retaining its natural shape, and no swelling or effusion being perceptible. This presence of pain, unaccompanied by any signs of change in the joint, has been considered as diagnostic of primary ulceration of the cartilages ; but I should not be disposed to place much reliance on these two points, inasmuch as I have often observed their coincidence in cases where the disease was confined to the osseous tissue of the heads of bones. As the disease advances, the pain becomes more acute; at times intolerable ; worse at night ; commonly referred by the patient to a particular spot, and often compared to the sensation as if an animal were gnawing the part. Although the pain is referred principally to the affected joint, yet it is often accompanied by sympathetic pain in some distant part, which may be so severe as to mask the original affection. Thus, when the hip is the primary seat of the disease, the most prominent symptom may be pain in the knee; again, when the knee is attacked, the pain often extends along the leg ; and disease of the elbow-joint may give rise to more uneasiness in the forearm and wrist than in the affected joint itself. In all cases, whenever the pain is at all severe, it is aggravated by any motion of the joint, and particularly by pressing the articular surfaces against each other. The patient, indeed, seems to avoid motion more carefully than the amount of pain would seem to

account for, and hence the muscles connected with the joint are often more or less wasted at an early period of the disease. The wasting of the glutei muscles is a well-known symptom of hip-disease, and the same atrophy from forced repose is observed in the deltoid, in cases of ulceration involving the cartilages of the shoulder-joint. Unless the synovial membrane become accidentally implicated, there is never, as I have told you, any swelling about the joint at an early period of the disease. Many weeks may elapse before any trace of swelling can be discovered; and when this does occur, it is at first periarticular, being produced by effusion of serum into the cellular tissue outside the joint.

So long as the disease is confined to the articular cartilages, we have few symptoms beyond those which I have just enumerated—namely, severe pain augmented on pressure, disinclination for motion of the joint, sympathetic pains in distant parts, atrophy of muscles, and some periarticular effusion, which steadily follows the progress of the disease. These symptoms may continue, with little change, for a considerable time; but unless the disease be arrested, it sooner or later involves the synovial membrane and bones, inflammation sets in, pus is secreted, and the symptoms of the primary affection become confounded with those of general destruction of the joint.

The terminations of chronic ulceration of the cartilages are various. As this disease has no tendency to the formation of pus, unless other tissues become involved, it may terminate favourably at any period prior to the occurrence of synovitis, or the exposure of the bone; but where pus is effused into the cavity of the joint, the ligamentous tissues destroyed, the articular surfaces extensively injured, and dislocation of the bone has perhaps taken place, there can be no hope of saving the limb.

Ulceration of cartilage may be confounded with synovitis, or with scrofulous disease of the heads of bones. From acute inflammation of the synovial membrane it can always be distinguished, if seen at an early stage, the former disease being always marked by rapid effusion of fluid, which takes place immediately after the onset of pain, and produces an uniform swelling of the interior of the joint, whereas in disease of the cartilage the swelling is slow in its formation, external to the joint in its seat, and never makes its appearance until a considerable period has elapsed from the first sensations of uneasiness and pain.

It will require somewhat more care to distinguish chronic degeneration of the synovial membrane from chronic ulceration of cartilage. The former is much more indolent, and although the swelling of the joint is slow in formation, it commences at a much earlier period than that which accompanies destruction of the cartilage. The sensation which the swelling communicates to the hand on pressure is also different; it is doughy, elastic, and superficial, not accompanied with obscure fluctuation, as we find in ulceration.

According to Sir Benjamin Brodie, ulceration of cartilage is more

likely to be confounded with scrofulous disease of the heads of bones than with any other articular affection ; but he thinks that attention to the following points will generally enable us to arrive at a satisfactory diagnosis. Ulceration belongs chiefly to the middle and subsequent periods of life, whereas scrofulous disease occurs in children, or in those little advanced beyond the age of puberty. Ulceration of the cartilages, again, commonly attacks dyspeptic persons free from any constitutional taint, or those who have been subject to rheumatism, while the scrofulous articular affection is almost always attended by the general signs of a scrofulous diathesis. Besides this, the pain in scrofulous disease of the bones is slight at first, and does not appear to be developed until suppuration has set in ; whereas, in ulceration there is always severe pain at an early period, and the disease may continue for a great length of time without causing any effusion of pus into the cavity of the joint. Ulceration of the cartilages may, however, manifest itself as a primary disease in scrofulous persons, and if, as Sir Benjamin Brodie affirms, the ulceration may commence on that side of the cartilage which is next to the bone, it is difficult to discover any assemblage of symptoms by which the one disease can be distinguished from the other. In a practical point of view it should never be forgotten, that joints, especially the large ones, are of complex structure ; that the different tissues composing them are intimately united to each other, and concur in the performance of a common function ; hence, disease commencing in any single tissue, is often quickly propagated to the neighbouring structures, thus soon losing its peculiar characters, and assuming those of general lesion of the joint.

In the treatment of ulceration of cartilage great discrimination on the part of the surgeon is required, and the means employed must vary according to the views which he may have formed of the nature of the disease, whether it be simple or scrofulous, whether it be primary or secondary, whether it be confined to the cartilage or have extended to other tissues and given rise to effusion of pus within the cavity of the joint. In this, as in most other articular diseases, the surgeon's first care will be to ensure perfect repose of the joint. If this be necessary in cases of synovial inflammation, you can readily understand how it is still more expedient to keep the joint perfectly motionless when its cartilaginous surfaces are the seat of disease, and undergoing a process of destruction to which slight accidental circumstances may give a highly acute character, and render the preservation of the limb hopeless. All friction, then, between the cartilaginous surfaces must be avoided as completely as possible and this object is attained either by Mr. Scott's method, or by the use of splints and bandages in the manner which I have already described. These are to be continued until all pain has disappeared, and until the subsidence of swelling shows that the active stage of the disease has been completely mastered.

At an early period of primary ulceration it does not seem probable that local abstraction of blood will be attended with much benefit. We have no proof that this form of the complaint is of an inflammatory nature, to be subdued by blood letting, and experience confirms this view. On the other hand, when ulcerative destruction of the cartilage is secondary, depending on inflammatory action in the neighbouring soft tissues, abstraction of blood is manifestly indicated, and must be repeated according to the intensity of the inflammation with which the ulcerative process is secondarily connected. The same remark applies to cases which are undergoing treatment, and in which, without any assignable cause, or perhaps from the premature use of the joint, increase of pain and swelling indicate the accession of an inflammatory state. Here, however, we must be careful to ascertain that the swelling of the joint does not depend on the effusion of purulent matter within its cavity, for abstraction of blood under such circumstances would not only be useless, but positively injurious, by enfeebling the patient and rendering him less capable of sustaining the confinement which he must unavoidably undergo. At the early period of ulceration of cartilage mercury should be administered in all cases where the general state of the patient does not contraindicate the use of this powerful remedy. In my own practice I am in the habit of giving calomel and opium until the mouth is affected, and I find that if the mercurial action can be borne, and is early set up, it generally arrests the complaint. Some patients, however, are unable to bear the administration of mercury, while in others the disease returns the moment the mercurial action is discontinued. For the latter cases we may try an alternative course of Plummer's pill with sarsaparilla. It seems almost unnecessary to add that for the scrofulous form of ulceration mercury should never be employed. It should be replaced in such cases by cod-liver oil, and other remedies which I shall more fully notice in a lecture on scrofulous affections of the joints. In those cases unconnected with scrofula, where, from the general state of the patient, or from some peculiar idiosyncrasy, mercury cannot be borne under any form, I would recommend you to try the effects of colchicum, combined with an alkaline aperient. When the inflammatory action in the joint has been subdued, our next reliance is to be placed in counter-irritation. Various methods have been had recourse to. Some surgeons place most reliance on blisters, which are either applied in quick succession, or kept open by means of savine ointment; others, again, insist on the necessity of our having recourse to a more severe and permanent mode of counter-irritation, and establish issues with caustic potass; lastly, we are advised by some writers to employ moxæ or the actual cautery. To me it seems that in the recommendation of these various forms of counter-irritation sufficient care has not been taken to discriminate the different stages of the articular disease. When this is far advanced, permanent counter-irritation by means of the seton may be useful, but then the

disease has ceased to be ulceration of cartilage; at all events, it has involved other parts of the joint. But in the earlier stages, when we have reason to believe that the ulceration is still confined to the tissue in which it originated, I am inclined to prefer placing a blister over the affected joint, and, if necessary, employing several blisters in succession. I have always adopted this plan in preference to keeping the blister open. I do not mean to deny the utility of setons or issues at certain stages of this disease; what I wish to convey is, that, according to my own experience, they should be reserved for the second or more advanced periods of the complaint, when the development of certain symptoms shows that it has not been arrested in the cartilage, but is extending to the neighbouring structures and threatening more or less extensive destruction of the joint. When this occurs, the treatment peculiar to ulceration of the cartilage ceases, and must be replaced by measures varying according to the different indications of the case. Amputation of the limb may be the only resource left, or it may be probable that anchylosis is taking place, when the precautions which I have already described to you are to be insisted on. Should abscess have formed in the cavity of the joint its treatment must be conducted on the same general principles as those which guide us in the treatment of this occurrence under other circumstances. The matter should be freely evacuated, and the limb retained in a proper position so long as there appears any chance of obtaining an imperfect cure through anchylosis; but it must be confessed that extensive destruction of cartilage, followed by the changes which always attend this form of articular disease, often entails, sooner or later, the loss of the limb.—*Lancet, June* 3, 1854, *p.* 589.

[Mr. Coulson, with most other surgeons, places more reliance on constitutional than on local treatment in the diseases of joints. In the following remarks we find some good observations on the subject]

Scrofulous disease of the heads of bones—and the same may be said of this affection without reference to its peculiar seat in the bone —never, I believe, admits of radical cure, except in the very earliest stages, when it is limited to a small extent of tissue, consists in mere expansion of the cancelli with hyperæmia, and manifests itself by some tumefaction of the head of the bone with, perhaps, increase of its temperature. These symptoms, together with pain, indicate a commencement of inflammatory action, and the young practitioner might be disposed to have recourse at once to active antiphlogistic measures. Experience, however, demonstrates that local bloodletting is scarcely ever admissible, and on no account to be accepted as a general rule of treatment. In some cases where the constitutional signs of scrofula are equivocal, and the symptoms are severe at the beginning, a single application of leeches to the joint may be indicated.

This rule applies to scrofulous disease of the articular extremities of bone, but I would not extend it to certain cases of disease in the

shafts of bones accompanied by periostitis; for this, though of a scrofulous nature, may manifest itself in so acute a form, as to require active controlling measures. Cataplasms or warm fomentations have no effect on the deep-seated inflammation, and can only afford some relief when an abscess is making its way to the surface, giving rise to pain and inflammation of the superficial tissues.

The propriety of having recourse to counter-irritation at an early stage of the disease, has given rise to much difference of opinion amongst the best authorities. Sir Benjamin Brodie, says, "all kinds of counter-irritation, such as blisters, issues, setons, and tartarized antimonial ointment, are not only not useful, but actually mischievous," The only exception which he admits to this rule, is in cases where the disease, being situated in the hip-joint, is productive of more than an usual amount of pain. Here the use of several small blisters in succession, or the insertion of a seton in the groin, immediately in front of the hip-joint, afford much relief to the patient. Many of the continental surgeons, on the other hand, advocate the use of revulsive or discutient applications to the skin in scrofulous joint diseases. Those most commonly employed are the iodine ointments of Lugol, and the lunar caustic ointment of M. Jobert de Lamballe. When iodine ointment is employed, it should be strong enough to cause desquamation of the cuticle in a few days, and contain one part of iodine, two parts of ioduret of potassium, and about thirty of lard. The joint should be rubbed with this ointment twice a day. M. Jobert's ointment contains, according to its strength, four, eight or twelve drachms of the nitrate of silver, to thirty drachms of lard. This remedy soon excites a pustular inflammation of the skin, and, according to M. Jobert, is one of the best means we can employ for combating the pain and tumefaction which attend white swellings of joints.

My own experience is against the use of counter-irritants, or discutient applications in the early stages of this affection; their efficacy is more apparent than real; they merely excite absorption of the fluids effused round the joint, and exercise no influence whatever on the progress of the disease which is going on within it; in fact, they simply act as does compression over a cancerous tumour, removing the innocuous products of inflammation, but leaving the original disease and the cause untouched. The great inconvenience attending the use of counter-irritant and revulsive measures is the danger of carrying the external irritation too far, and thus augmenting instead of diminishing the internal malady.

This objection does not apply to the use of douches and topical warm bathing, which have been found advantageous in many cases of scrofulous diseases affecting the smaller articulations. M. Lebert, who has had considerable experience in the use of douches at the mineral baths of Lavey, regards them as best suited for cases of inflammation of the heads of bones, when the disease has lasted for some time, and when the surface of the bone remains intact, or the fistulous ulcera-

tions in it are superficial. They are still more efficacious at a later period to promote absorption of the plastic materials, which produce stiffness of the joints. Besides, local applications of every kind interfere with a condition which is essentially necessary to a cure; I mean keeping the joint perfectly at rest, in such a position that the opposite surfaces of the articulation shall exercise the least pressure on each other.

I have already explained so fully the necessity of paying attention to these two points, that I shall not dwell on them here, but an additional remark or two in reference scrofulous affections must be added. The structure of the hip-joint renders it impossible to keep that joint in a state of perfect repose, unless the patient be confined to the recumbent posture. Hence in scrofulous disease of the hip, you must place the patient on a bed or couch, and keep him there; but in all other cases I would content myself with securing the joint firmly in a proper position by means of splints, as I have already described, and allowing the patient to enjoy as much exercise in the open air as possible, taking due care that it is modified in such a manner as not to excite pain or uneasy sensations in the affected limb. It is almost unnecessary to remind you that free exposure to pure air exercises a more beneficial influence on the health of scrofulous persons than any medicine whatever, and experience has abundantly convinced me that any local effects of an injurious nature which may arise from exercise, (and, with proper care, we can generally avoid them,) are greatly counterbalanced by the genial influence of sun and air on the constitution of the patient.

The general treatment of scrofulous affections of the joints requires to be conducted with much discrimination, and pursued with untiring perseverance, for months, or even years, may pass over before a cure can be obtained. It is, however, a consolation to know that the disease is less dangerous than it appears to be, and that numerous patients, who formerly would have been condemned to undergo amputation of the limb, now recover under judicious treatment, wsth no other inconvenience than the deformity produced by anchylosis.

If the general condition of a patient labouring under scrofulous disease of the joints at an early stage be carefully examined, we shall often find some derangement of one of the grand secreting organs. The one most frequently in fault is the liver, and hence mild altera-alteratives should be administered for a few days, care being taken at the same time to obviate a torpid condition of the colon, which frequently exists. Of medicines which act on the constitutional derangement which is supposed to characterize scrofula, the best are cod-liver oil, iodine, and iron, and of these cod-liver oil is unquestionably the most efficacious. The value of this remedy is also enhanced by the fact that it appears to exercise a more beneficial influence over scrofulous disease of the bones than any other,—a form of the malady which has hitherto been most inaccessible to the effects of remedies.

It is important to keep in mind that this remedy, to prove efficacious, must be continued for a long time, perhaps for months, its use being interrupted form time to time, to prevent derangement of the digestive organs. The dose for a child is about a teaspoonful thrice a day; adults may take a tablespoonful. It is seldom advisable to go beyond an ounce a day, though many practitioners have carried the dose as far as three or four ounces. Cod-liver oil is not a specific for scrofula, and you must be prepared to meet with disappointments during its use; but a vast number of cases have established its efficacy, and I am inclined to believed that it possesses as much power over scrofulous affections of the bones as iodide of potassium does over secondary syphilitic diseases of the same organs.

The preparations of iodine have likewise an anti-scrofulous effect. They may be administered according to any of the well-known formulæ, or alternated with the cod-liver oil. Their efficacy is inferior to that of the oil, and, unless continued for a great length of time, they seldom produce anything beyond a temporary alleviation of the symptoms; still, experience has proved that, when properly administered, and assisted in its action by other means, iodine has effected a cure in many cases of severe and long standing scrofulous affections of the bones.

When the patient exhibits that peculiar cachectic state which often accompanies scrofula in large towns, being feeble and emaciated, with dirty skin, and an anemic appearance, the preparations of iron may be useful, and one of our great authorities on diseases of joints seems to prefer them even to iodine or the oil, He recommends for children the iron wine or the syrup of the citrate, and sometimes of the iodide of iron, for three or four weeks, when it is discontinued for eight or ten days, to be resumed again, and continued for a long period.

The functions of the skin are always deranged during the progress of scrofula, and hence perhaps the well-known efficacy of warm or tepid bathing, not only at the commencement, but in the more advanced stages of scrofulous joint-disease. Cold baths likewise produce excellent effects from their tonic properties. Neither hot nor cold bathing should be recommended indiscriminately at an early period of the disease. If the joint be painful, and any signs of active inflammation exist, it will be better to wait until the symptoms subside, when tepid baths, at a temperature of 90° may be tried. If they agree, the patient may continue in the bath for a quarter of an hour at a time, and they may be repeated every second day for a month or six weeks. After this period, or if the treatment has not commenced until all signs of active inflammatory process have disappeared, tepid salt-water bathing should be employed, and after a short time the temperature of the bath must be cold. The use of cold sea-water baths must, of course, be restricted to the fine season, from May to the end of September.

When circumstances preclude the patient from removing to the sea-

side, we must endeavour to imitate the sea-water bath in the best manner we can. The most simple way is to dissolve from three to six pounds of common salt in twenty-five to fifty gallons of water, and this bath is perhaps as efficacious as any other. The principal point to which you must attend is that the bath, whether natural or artificial, does not produce over-stimulation, and hence its effects should be carefully observed. Cold sea-bathing is undoubtedly more efficacious when convalescence has commenced than at any other time. At this period also the alkaline or sulphuretted mineral baths have been employed with great advantage, and there can be no doubt that iodine baths have also proved useful, though it is difficult to separate the action of the bath, in such cases, from that of the remedy which is rapidly absorbed by the skin.

I have already said, that as a general rule, I would not advise you to be lavish of revulsive or stimulant applications in the treatment of scrofulous diseases of the joints. Still, I would not say that they should be absolutely rejected. A great deal will depend on the form of the disease, and the general condition of the patient. When the disease is confined to the articular extremities of the heads of the bones, it would not appear that external applications produce any marked effect in arresting it, and when the patient labours under that form of scrofula which is attended with general debility, the use of setons, issues, or any revulsive, accompanied by a drain, is positively injurious. On the other hand, when the disease is seated in the synovial membrane or cartilages, has become manifestly chronic, and is attended with effusion into the periarticular tissues or ligaments, giving rise to stiffness of the joint and indolent swelling, various local stimulants may be employed with advantage. Frictions with iodine ointment are, perhaps, the best that we can have recourse to, and great benefit has been obtained from the judicious employment of douches, whether simple or medicated, hot or cold, in cases of chronic scrofulous arthritis, whenever the effused matters are of a kind susceptible of being removed by absorption. Warm douches seem preferable to cold ones, or to the vapour douche, though in some cases this is a valuable auxiliary. The general and local means now recommended would, however, produce but a limited effect, unless aided by proper hygienic measures—a fact which you can readily understand by remembering that scrofulous disease of the joints can only be treated successfully through the constitution, for the local malady is but a manifestation of the general or constitutional cachexy.—*Lancet, July* 1, 1854, *p.* 685.

[Mr. Coulson describes diseases of joints as existing in three conditions, viz., in the synovial membrane, in the cartilages, and in the cancellous structure of the articular extremities of the bones. It is only in the early periods of disease, however, that these distinctions can be made. When the disease has existed for some time the same general appear-

ance will exist, whatever be the structure diseased, and the great tendency is to the formation of matter in the joint.]

The formation of matter, during the course of articular disease, may take place under two circumstances, which you must be careful to distinguish from each other. The abscess may depend on inflammatory action in the soft parts external to the joint, to which it is confined, having no communication with the articular cavity: this I would denominate periarticular abscess; or the secretion of matter may be an effect of inflammation within the joint, the pus is effused in the cavity of the joint, and is either confined to that cavity, or has made its way into the soft parts by perforation of the capsule.

The treatment of abscess of joints involves many points of great practical importance, yet we must admit that it has not arrived at anything approaching perfection, if we reflect on the very different opinions entertained by the best surgeons in this and other countries. The principal questions on which practitioners are divided are,the propriety or expediency of opening abscesses connected with joints, and also the manner in which such opening should be made. Some prefer leaving the abscess entirely to nature; others recommend small and repeated punctures, aided by compression; while other surgeons, again, with whose opinions I agree, advocate free and early incisions. That this is the best method we can adopt for the treatment of periarticular abscesses which do not communicate with the cavity of the joint, I entertain little doubt, and I am inclined to believe that it may be extended also with advantage to many cases of perforating abscess of the articulations. It is a necessary condition of this practice that the joint should be freely opened, for there is then less danger of that general inflammation of the cavity which surgeons so much dread.

The changes which take place in a joint during the existence of abscess, and generally speaking in the latter stages of articular disease, are extremely various. During a certain time they will depend, in some measure, on the primary form of the disease, and on the tissue in which it has commenced. They may, as I have said, gradually proceed to complete destruction of the joint, or they may become arrested, a reparative process setting in, and a cure effected by anchylosis. Let us now consider this mode of termination. Anchylosis is the name applied to the greater or less immobility of the joint which succeeds disease, and depends on a fibrous or osseous union between the parts entering into its composition. It is, in a word, a mode of reparation like that resulting from the formation of a cicatrix or the deposit of callus; it may follow various lesions of the joint, and have its seat in different tissues; it may be external to the joint or internal; it may be entirely osseous or fibrous, or a mixture of both. All these differences will depend on the nature and extent of the previous disease, and probably on the age and constitution of the patient. After extensive destruction of the articular cartilages of a joint, the new osseous matter may be thrown out in such quantity as to produce complete

adhesion between the opposite denuded surfaces; in other cases, one of the bones seems lodged in a kind of cavity formed in the other, or the osseous matter may proceed from the outer shell of the bone, forming a bridge or splint, and sometimes a complete circle, which locks the bones together in a kind of case. Soft anchylosis is produced by adhesions or bands of unyielding fibro-cellular tissue, which pass from one bone to another, or are deposited in the ligamentous structures external to the joint. Finally, we may have a false anchylosis, in which the bones are unchanged, and the ligaments but little altered, the stiffness and immobility of the joint depending on fibrinous deposit exterior to the capsule, but chiefly on a rigid and contracted state of the muscles connected with the joint.

The diagnosis of anchylosis presents no difficulty; for it is easy to see that the joint is rigid or immovable, but this teaches us nothing in a practical point of view. The surgeon's main object is to afford relief; and in order to direct his efforts in a rational manner, he must endeavour to ascertain, with some degree of precision, the nature of the lesions which impede the motions of the limb. It is evident that nothing but disappointment could be the result if we were to apply to a complete osseous anchylosis the treatment suited for immobility depending on fibrinous deposit or altered muscular action. The first question, then, which you will have to determine, is the degree of immobility caused by the anchylosis; and this point alone, if properly investigated, will throw much light on the whole nature of the case. The patient should be encouraged to move the limb; and, if quite unable to do so, the surgeon must make the experiment himself, care being taken that one of the bones is firmly fixed, while an effort is made to move the other with the hand. The extent, however, to which the heads of the bones are moveable can seldom be ascertained without the assistance of mechanical means, in the use of which the utmost caution must be observed. The impediment to motion, as I have said, may depend on contraction of the muscles, on fibrinous deposits in the soft parts or bones, or osseous union; hence your attention will directed to these three points. To ascertain how far the muscles are involved, you must test their condition with the fingers, while attempts are being made to move the joint, If they are not hard and contracted, and if their relaxation has no influence on the mobility of the joint, you may reasonably conclude that they offer no impediment to its motion. The slightest motion in the joint is sufficient to show the absence of osseous anchylosis; but we cannot safely reverse the proposition, and affirm that bony union exists because the joint is completely immovable. This latter condition may be the result of fibrinous anchylosis, combined with irregularities of the osseous surfaces, which permit one bone to become encased as it were within the other. Fibrinous anchylosis is an ordinary result of scrofulous disease, and we may be pretty certain that we have to deal with this form when the anchylosis has supervened after the healing of fistulous abscesses and subsidence of scrofulous tumefactions of the joint.

The treatment of anchylosis will vary according to its nature, whether osseous or fibrinous. In the former case, little or nothing can be done, for I cannot advise you to imitate the practice of M. Louvrier, nor has experience yet pronounced on the method proposed by Mr. Barton, an American surgeon, who made an artificial joint by dividing the shaft of the bone below the anchylosed joint. In cases of fibrinous anchylosis, our first object is manifestly to restore, as soon as possible, the natural motions of the joint; and it is consoling to know that a great deal may be done in this way by judicious management. As long as any trace of active disease exists within the joint, we must abstain from artificial motion; but when this has disappeared, gentle motion should be commenced, sometimes with the hand, sometimes with instruments, and the movements gradually prolonged, care being taken to interrupt them whenever they excite any pain. Stimulant frictions, shampooing, douches, and the vapour-bath, may also be employed with great advantage. When the limb has become anchylosed in a false position, special contrivances must be had recourse to for the purpose of bringing it back to an useful if not normal direction. This also must be effected in a slow and cautious manner; and when we have obtained the object, I am of opinion that all has been effected which it is prudent to undertake. In many old cases of anchylosis, especially when the knee-joint is the seat of deformity, the flexor muscles are so rigid and contracted, that gradual extension by instrument either fails to straighten the limb, or must be abandoned from the excessive pain it produces. Here great benefit has been derived from division of the tendons of the retracted muscles and aponeurotic bands; and the great success which the late Professor Dieffenbach obtained by this method would certainly appear to claim for it more attention than it has received in this country.

The extensive destruction of cartilages, bony structures, and ligamentous tissues, which sometimes takes place during the progress of articular disease, may so far diminish the bonds of union between the opposite surfaces of a joint, that the bone escapes from the articular cavity, and secondary luxation is the consequence. I have already described to you the circumstances under which these luxations are produced, and the various kinds of displacement that may occur in each joint, I shall now, therefore, merely add a few remarks relative to their treatment. This is either preventive or curative; and I need hardly remind you that the former is of infinitely greater importance than the latter, from which little can be expected. During the treatment of chronic articular disease, you must always bear in mind the possibility of its giving rise to secondary displacement of the joint; and you must also reflect on the principal circumstances which favour such displacement, for it is by avoiding or removing the causes that we have the best chance of obviating their results. Now, when the connecting parts of a joint have been destroyed by disease to a certain extent, the principal causes which may subsequently produce secondary disloca-

tions, are muscular contractions and faulty positions of the affected limb. Indeed, both these causes are generally combined in effecting the displacement, and the means proper for avoiding the one will be applicable to the other likewise.

I have already described what I conceive to be the best position for each articulation, and I shall now briefly allude to the general rule—viz., that in determining this you have to consider what position is least likely to cause undue pressure on the ligaments or capsule of the joint so as to favour separation of the articular surfaces from each other; and also what position is best calculated to insure, in case of anchylosis, an useful direction of the extremity. It fortunately happens that, generally speaking, the same position which is the best in cases of anchylosis, is also the best calculated to obviate the effects of muscular contraction and the tendency to displacement. Thus, for example, when the lower extremity is kept nearly straight, with its axis in the same direction as that of the trunk, when any undue degree of rotation is avoided, and the foot sustained in such a manner as to form a right angle with the leg, then is the danger of secondary luxation diminished as much as possible, and if anchylosis should take place, the limb is in the most favourable position. When luxation has once taken place, it becomes a matter of serious consideration whether it admits of any relief from the hands of the surgeon. For my own part, I believe that in the great majority of cases, if large joints be implicated, little or nothing can be done to remedy the deformity. The elbow-joint is perhaps the only one to which attempts at reduction of secondary dislocations can be applied with much prospect of success. Here the head of the radius may be dislocated outwards and backwards, and no very great difficulty may be experienced in restoring it to its place, by bringing the arm to a middle state between pronation and supination, while firm pressure is at the same time exercised on the head of the bone. A proper apparatus must then be applied, and its use continued for a considerable time. When you reflect on the great destruction of the various parts of a joint which must have taken place before its articular surfaces can be separated from each other, on the diseased condition of the bones, and on the contracted state of the muscles or ligamentous fibres which exists whenever the dislocation is of any standing, you can easily perceive both the difficulty of effecting a reduction, and the probable inutility of such a proceeding, even if it can be carried into execution. In the knee-joint, for example, the resistance of the fibrous bands can seldom be overcome; and the irregularities of the bony surfaces, from extensive destruction, are such that little or no advantage would be gained by bringing them again into juxta-position after displacement. Secondary luxation of the head of the femur usually takes place on the dosum ilii; occasionally, also, into the obturator foramen. I shall presently, in speaking of excision, notice the changes by which such displacements are accompanied, and shall endeavour to appreciate their

influence on any mode of treatment employed; for the present we may ask—Is it possible to reduce a secondary luxation on the dorsum ilii, and if so, is it advisable that such an attempt should be made under any circumstances? These are questions not easily decided in the actual state of our knowledge, for little has been done towards solving them, in this country at least, where the attention of surgeons has been exclusively directed to the subject of excision. I have, however, related in my work 'On the Hip Joint,' a very remarkable case, which seems to prove that even spontaneous reduction may take place. The head of the femur could be felt on the dorsum ilii, and the limb was shortened by about three inches. In order to relieve the pain excited by irregular muscular action, but without any idea of reducing the dislocation, counter-extension was employed uninterruptedly for four days, and then given up from the irritation it produced. Seven weeks afterwards, while the nurse was assisting the patient to turn in bed, she felt "the bone rushing past her hand," and on the following day it was discovered that the limb was restored to within half an inch of its natural length, presenting no appearance of inversion or eversion, and quite free from pain. This case seems to place the occurrence of spontaneous reduction beyond doubt: while the excellent work of M. Humbert proves that secondary luxations of the femur on the dorsum ilii may, under certain favourable conditions, be not only reduced, but permanently cured. In one of the cases related by M. Humbert, the limb was shortened to the extent of four inches and three-quarters; in another nearly two inches. To effect the reduction, special apparatus somewhat similar to those employed in cases of congenital luxation, must be used, and the extension is to be effected in a gradual manner. The time required will depend on the readiness with which the displacement yields. I fear that the number of cases to which this method is applicable will be considerably restricted in practice. To afford any chance of permanent benefit, the patient's health must be in a more favourable condition than we usually find towards the close of a chronic hip disease; the head of the femur must have undergone little alteration, and the cavity of the joint must be in a much better state than experience would lead us to infer after the destruction of parts which precedes spontaneous dislocation. The cases related by M. Humbert deserve, however, more attention than they have received; for in eight of them we find that the practice adopted was followed by complete and permanent success.

In this country, as I have already observed, surgeons are more inclined to adopt the method of excision, on which I shall now offer a few remarks. Whatever opinion we may form of excision when applied to joints, the articular surfaces of which are not separated from each other, I do not think that we are justified in having recourse to it in the cases now alluded to, namely, where the head of the femur has been dislocated on the dorsum ilii, in consequence of hip disease.

In the first place, the disease under which the patient, in a great majority of cases, labours, is a constitutional one ; and, in the next, it is almost always impossible to remove the whole of the diseased portions of bone, without which no permanent cure from the operation can be expected. There might, perhaps, be some strong ground for extirpating the head of the bone, if the complaint were confined to this part, but if we consider the general state of a patient during the last stage of hip-joint disease, we shall be at once convinced that any danger to life which may exist arises from the general condition of the subject ; and that although the local malady may, to some extent, aggravate the general symptoms, yet it is not their cause, neither will its removal prove their remedy. Besides, let us consider a few of the conditions under which it is said the operation is justifiable. The head of the bone must be displaced, and be lodged on the dorsum of the ilium. But, in a great majority of cases, it will be found that the shortening of the limb does not depend on displacement of the head of the bone—a part which, in fact, has ceased to exist—but on destruction of the head from ulceration, and a drawing up of the trochanter to a level with the brim of the acetabulum. Another condition is that the acetabulum should be free from disease ; but, I would ask, do we really possess any means of ascertaining whether the socket of the hip-joint may not be diseased, as well as the head of the femur—whether the acetabulum may not be extensively involved in the affection, ulcerated, carious, or necrosed ? And if this were the case, what advantage can we expect from removing the head of the femur, when we leave other and more important parts behind untouched by the operation, though equally. if not more so, involved in the disease ? You are to understand that what I have just said applies to dislocation of the head of the femur ; and not to excision, when applied to the smaller joints, or in cases where the whole of the diseased bones can be removed, with some hope of the limb being tolerably useful afterwards.

The last point which we have to consider is amputation, This last resource in cases of articular disease is now more rarely necessary than it was considered some years ago, and before you think of employing so severe a measure, you must be well convinced that the only chance of saving the patient's life is to sacrifice his limb, or that the disease before you is absolutely incurable. To pass a decided opinion upon this point, much judgment and experience are required, for it is astonishing to what a degree articular disease may sometimes proceed, in young and scrofulous patients especially, without being necessarily incurable. I have seen many cases where amputation appeared to be the only resource, yet, by waiting a little, and by carefully attending to the general health, the patients have recovered with tolerably useful limbs. Before deciding on the question of amputation, you must carefully reflect on the general condition of the patient, and on the nature and degree of the lesions in the affected joint. You must

have made up your mind that the local disease is incurable, and you must also have a reasonable hope that the removal of the limb will be followed by a restoration of health. With reference to this point, you will have to consider what effects the long-continued local disease may have produced on the general health and strength of the patient, but above all things you must assure yourselves that he is free from signs of pulmonary or abdominal tubercle. If these be present, amputation can only hasten death. On the other hand, patients often recover in a rapid manner, and from an apparently hopeless state, after removal of the diseased limb. But you may ask, at what period of the disease, and under what conditions of the joint, should amputation be performed? This is a difficult question to answer in a general manner. I may, however, state, that when complete disorganization of the joint is evidently going on, and cannot be arrested by the usual means,—when extensive abscesses exist around the joint, and the drain or irritation begins to tell on the patient's health,—when it is clear that the articular cartilages are more or less destroyed, the ligaments softened, the bones displaced, and when, after waiting for some time, you can perceive no tendency to anchylosis,—in all cases of this kind the propriety of having recourse to amputation is placed beyond doubt.—*Lancet, Sept.* 2, 1854, *p.* 185.

46.—ON AMPUTATION AT THE KNEE-JOINT.

By W. Fergusson, Esq., F.R.S., &c.

[There is a great difference between amputation at the *knee* and at the *knee-joint*. Sometimes it is called amputation at the knee, when it is either just above or just below this part. Amputation at the knee-joint has been performed but a few times in this country. The following case was admitted into King's College Hospital on January 25th, 1854. The joint was much diseased, the surfaces of the bones being rough and denuded, with a considerable collection of matter in the upper part of the leg, Mr. Fergusson amputated the limb at the joint, in the way described in his work, and then proceeded to make the following remarks:]

When I first performed the operation, to my knowledge it had not been previously done in England, for I cannot find any record of the fact, and such an operation performed for the first time would not likely be passed over without some notice being publicly made.

This operation has since been followed by others, among the first of whom I may name Dr. George Williamson, now in India, one of my former assistants. The first time I performed this operation was on the person of a full-grown man; (the case is mentioned in the third edition of my work on 'Practical Surgery;') and I have rarely seen or made a better stump. He has repeatedly walked forty miles a-day, and once walked one hundred and twenty miles in three days; and, what is more astonishing, his false leg was but indifferently made and

padded, the spoke of an old wheel being considered by the man an excellent substitute for a more expensive contrivance.

In consequence of such great advantages arising from my first trial of the operation, I have since frequently performed it. Notwithstanding, several objections have been made. Mr. Syme, who had performed the operation in Scotland before I attempted it here, had taken a dislike to the proceeding from something that went wrong in his own cases. Mr. Syme imagines that greater danger is incurred by a larger surface of bone being exposed, by the removal only of the condyles, than if the bone be sawn higher up in the shaft. But mischief, I think, is more apt to occur when the bone is sawn in the shaft. Where the bone is vascular, I think there is little chance of necrosis, and much less of caries; and you have frequently seen how kindly the two cut surfaces of the spongy portions of bone heal in cases of excision of the elbow-joint.

Another objection made is, that the length of the stump is very awkward. This I do not admit; if the stump be short, an apparatus cannot conveniently be fitted, and the bone, when cut too high, is liable to be tilted forward by the psoas and iliacus muscles. Indeed, I cannot perceive any objection to a long stump. Objections have been made to a long stump of the leg, and amputation of the leg is often recommended to be done a short distance below the knee, but I am doubtful of the utility of such a step as a general rule.

Again, a long stump in the thigh can never hinder in any way; besides, the leverage is much greater than if it were only half the length. In addition, the great breadth of bone, when well covered, is better able to support the weight required to be borne.

This objection might be raised by some,—that this operation is not truly an amputation at the joint, as the condyles were taken away. If such be allowed, then one might say that Mr. Syme's operation at the ankle is not an amputation at the joint, for he always removes the malleoli; but such an objection could not be held reasonable, and the operation now under consideration I deem a great addition to the history of amputation, and have taught it as such for the last ten years.

I now perceive that for nearly the first time mention is made of this operation in the surgical journals of the day, which, I make no doubt, will greatly tend to the advantage of this department of surgery.

When I first commenced my profession, it was an understood rule, with but few exceptions, that the coverings of the bone in an amputation should be taken from the sound parts of the region when the operation was required; as, for instance, in amputation of the thigh, the soft parts were always taken from the substance of the thigh; so also in amputations of the leg. But in this case, and in amputation at the knee, the soft parts covering the end of the femur are actually the tissues that originally constituted the calf of the leg.

In the history of amputation it has always been the aim of the surgeon to make a good stump, its quality depending greatly upon the proper covering of the bone. If the soft parts be scanty, a bad stump must result; if, on the other hand, the covering be too large, the result will likewise be unsatisfactory. A remarkable instance of this latter kind was under notice last summer in this hospital. But there is more danger of the covering being scanty than profuse. The fleshy condition of the covering, as you know, is ultimately converted more or less into a fibrous texture.

Though amputation cannot be said to be the opprobrium of surgery, an axiom I laid down in my first paper on Conservative Surgery—"For the greater proportion of sound material that we can save in any operation on the body, the nearer we come to the perfection of good surgery"—yet I think amputation at the knee-joint may fairly have at least a footing in the province of conservative surgery.

This operation has lain for some time in abeyance, I now find my name associated with it in the journals, in papers which have recently appeared on the subject from the abler pens of my friends Mr. Potter, of Newcastle, and Mr. Jones, of Jersey—men who, with myself, I would fain hope, have no desire to have their names connected with novelties, unless they be for the good of our fellow-creatures and the advancement of surgery,

In cases of injury of the joint, including great contusion of soft parts, I am doubtful whether the operation should not be effected above the seat of injury. As to the mode of performing the operation, I first make a small anterior flap, drawing the knife across the front of the joint, and then, inserting the point of the blade behind the femur, thrust it through to the other side, close to the condyles; then, carrying it downwards, cut the posterior flap from the calf of the leg. The saw is then applied a little above the condyles, and the flaps brought together as in an ordinary amputation.

My friend Mr. Potter, of Newcastle, saws through the bone before making the posterior flap; but I prefer the method I have described, although the great aim is to obtain sufficient material to cover the bone.

In some instances I first effect the separation of the leg at the articular ends, and thereafter cut away as much of the femur as seems needful. In all cases it is requisite to take the full length of the calf for the posterior flap, as the soft parts of the back of the thigh contract very much in the course of time. The patella might be saved in some examples, but in general I think it would be best to remove it. —*Med. Times and Gazette, July* 8, 1854, *p.* 26.

47.—ON AMPUTATION AT THE KNEE-JOINT.

By G. M. Jones, Esq., Jersey.

[In an interesting case of comminuted fracture of both bones of the right leg Mr. Jones proceeded to amputate at the knee-joint. There

was a considerable lacerated wound about three inches above the internal malleolus, through which near two inches of the tibia protruded.]

Operation, Nov. 10.—As the greater portion of the integument covering the petella had suffered materially from erysipelatous inflammation, it was thought advisable to remove as much of it as possible; consequently an incision, which commenced just over the internal condyle, was carried, in a semilunar form, over to the opposite one, where it joined, in a transverse direction, a part of the sinus laid open three weeks before, and, for the reason just mentioned its concavity was made to touch the superior edge of the patella, the upper attachment of which was next divided while the knee was bent. The knee was again straightened, and the knife introduced at the point where the first incision commenced, was carried downwards a considerable way along the edge of the tibia, then brought along the calf in a lunated form, and carried upwards along the side of the fibula until it met the extreme point already mentioned; the knee again forcibly bent permitted the different ligaments of the joint to be easily divided. The fore-finger and thumb of the left hand were then used as retractors for the already divided integuments, while the palm, thrust through the soft textures of the under part of the joint, followed them, and thus completed the flap. The cartilaginous surface was next removed, and other portions pared off. But two vessels required ligature. The parts were now brought together, and kept so by means of sutures; and pledgets of lint moistened in cold water were applied to the stump.

The hemorrhage during the operation was very trifling. The patient was, however, removed from the operating table in an alarmingly weak state, and continued so for several hours after, so that powerful stimuli had frequently to be given, and hot-water bottles applied to the extremities.

During the recovery, which was both tedious and protracted, the same plan of treatment was, with slight deviations, followed out. The local treatment consisted principally of the water-dressing and moderate pressure applied either by adhesive plaster or bandage. The system was supported throughout by the most nutritious diet. For two months the patient was allowed one bottle of port wine and two pints of porter per day, and had quinine, &c., given in large doses. For upwards of a fortnight after the operation, the patient's extreme debility gave rise to well-grounded fears that death would soon terminate his sufferings, and, as may well be supposed, the appearance of the stump during this anxious period was anything but satisfactory; the stomach, however, never once rejected the food given, even when most disinclined to take any. This one happy feature in the case was naturally soon followed by an improvement in his health, so that at the expiration of six weeks all fear with regard to a favourable termination was at an end. On the 20th Feb. the stump was healed (it might almost have been considered so some time before), and the patient was able to move about on crutches.

Remarks.—Although amputation at the knee-joint has occasionally been performed on the Continent, and recommended by Velpeau, and other eminent surgeons, it does not appear to have met with the approval of British practitioners. In proof that such was, at all events, the case very recently, Mr. Fergusson, in his second edition of "Practical Surgery," published that year, while speaking of this operation, states, "Amputation at the knee-joint has never to my knowledge, been performed in this country." And on referring to the works of Skey, Miller, Druitt, and others, I find no mention of the operation, either as approved of or condemned; although Mr. Fergusson, in a later edition (his last, 1852), speaks of cases which have since come under his own practice, in which the results have been so satisfactory that he is disposed to consider the operation worth the attention of surgeons. I have not been able to find that the recommendation of this celebrated surgeon to carry out the views of Mr. Syme, to whom the profession is certainly indebted for that which may almost be regarded as a revival of Hoin's operation, has been attended to by practitioners in general.

The entering so fully into the details of this case prior to the operation, may at first sight appear unnecessary. My motive is to show, that the low, debilitated state the patient was in would in all probability have retarded recovery quite as much had amputation been performed through the continuity of the thigh as at the knee-joint. The time taken in effecting a cure must not, therefore, be considered as prejudicial to the operation.

The principal aim of surgeons of the present day is to avoid amputation if possible; and, failing this, to retain as large a portion of the limb as may prove of the greatest use and comfort to the patient. My endeavours to effect the first were, unfortunately, unsuccessful; not so the second, as the present state of the patient will, I think, satisfactorily prove.

The man has now a most serviceable stump, upon which he can bear the weight of his trunk in progression. A good firm cushion of muscular and integumental structures covers the extremity of the femur; it can be manipulated without the least pain. The posterior flap, formed out of the muscles of the calf, and which was brought up to cover the condyles, has united to the anterior one, and the line of their union is two inches above the extremity of the bone. The internal condyle is abundantly covered with soft structures, the external not so completely, the greater prominence of this part being in some degree apparent through the cicatrix; with this exception, the stump may be considered a perfect one; practically, I have no doubt it will, in time, prove such.

This case proves that great advantages result, as far as concerns progression, in this mode of amputation; there is not such an amount of lateral and outward motion required; the limb does not in walking describe the semicircular curve which one so commonly remarks in

amputations higher up; the gait is more that which follows on anchylosis of the knee-joint; the limb is brought more directly forwards and backwards by the rectus and posterior extensors; the walk is consequently more firm and assured, and, as far as the trunk is concerned, there is not the same demand for compensating muscular power in steadying and balancing the body, such as one finds in a greater or less degree in different persons. The deduction, therefore, to be drawn from this case is, that a patient is evidently benefited by preserving as great a length of femur as possible.—*Med. Times and Gazette, June* 3, 1854, *p.* 570.

48.—ON EXCISION OF THE KNEE-JOINT.

By W. Fergusson, Esq., F.R.S., &c.

A few years back excision of the head of the femur was viewed with much distrust by a great many surgeons, and warm discussions took place respecting the operation. The opposition became, however, gradually weaker in proportion as the results were more and more favourable, and at the present time the great majority of hospital surgeons of this metropolis are reconciled to this procedure. The great point with the resection of the head of the femur, as well as with the resection of other processes of bone, is to make a proper choice of cases, the object being to save life before the disease has exhausted the patient, and to favour the formation of a new joint, likely to be endowed with sufficient mobility to render the limb valuable and useful. This end has been attained in several instances, and it is to be hoped that the operation will be the means of restoring to health and usefulness many a sufferer from hip-joint disease.

But it should not be forgotten that there is such a thing as a spontaneous formation of a new joint on the dorsum ilii, and that the possibility of such a termination should be kept in view when operative measures are contemplated. No inconsiderable number of young subjects may be noticed in the streets of London, with whom it is evident that the disease has ended in dislocation of a more or less perfect head of the femur on the dorsum ilii, the new joint enjoying a very fair amount of motion, and the limb being of course considerably shortened.

Whether excision of the knee-joint will ever gain as much favour as the operation just alluded to is doubtful, because the incisions and removal of osseous parts are much more extensive than about the hip, and the risk of inordinate inflammation and constitutional irritation much greater. Anchylosis of the knee-joint is also a more frequent occurrence than the same change in the hip, and there is less prospect of efficient support from an excised and partly anchylosed knee than from a new joint formed on the broad and resisting surface of the ilium.

But the parallel we have just drawn is not of such immediate prac-

tical importance as the juxta-position of excision of the knee-joint and amputation of the thigh, for these two operations are frequently the only alternatives left. It is, of course, a great advantage to arrest the disease of the knee-joint and preserve the limb, and surgeons would perhaps be inclined always to give a trial to resection before proceeding to amputation, if it were not plain that the work of repair, after excision of the joint, is extremely slow, and may tell injuriously upon an already impaired constitution and weakened frame. Nor can it be forgotten that the interference with osseous texture is much more extensive in resection than amputation, and that a stump is much sooner formed than an imperfect union between osseous surfaces laid bare by the saw. But Mr. Jones, of Jersey, silences objections by pointing to his successful cases, and we gladly submit to such peremptory arguments.

In the case before us, Mr. Fergusson was inclined to allow the knee-joint of his young patient to anchylose, the boy, who is about ten years of age, having suffered from chronic inflammation and disorganization of the articulation for several years. He was admitted into the hospital about six months before the present operation, and his health and the aspect of the joint improved so much that Mr. Fergusson sent him into the country, with the hope that the disease would become arrested, and anchylosis take place. But the poor little boy came back to the hospital with a renewed inflammatory attack of the joint, and no alternative was now left but amputation or resection.

Mr. Fergusson decided in favour of the latter operation, and on the 29th of July the child was brought into the theatre, and narcotized with chloroform. The right lower extremity was much emaciated, the knee-joint presented the usual globular shape, but no fistulous apertures were observable. Mr. Fergusson made the usual H-shaped incision in front of the joint, and having reflected the upper and lower flaps, the condyles of the femur and the articular surfaces of the tibia were removed by the transverse section of a broad and short saw, after the soft parts had been carefully cleared away. Mr. Fergusson had, in previous operations, removed the patella also ; but in this instance he left that bone, after having gouged the carious surface it presented. It was also found, when the operation was nearly completed, that the lower part of the shaft of the femur, close to the condyles just removed, was bare of periosteum, and Mr. Fergusson judged it prudent to remove the unprotected portion of bone to the extent of about an inch. When the leg was attempted to be brought on a line with the thigh, it was found that the rigidity of the hamstrings prevented apposition. Mr. Fergusson therefore proceeded to divide the inner hamstring subcutaneously, and no obstacle was then left to the approximation of the osseous surfaces. The margins formed by the incisions into the soft parts were then brought together by sutures, after a small quantity of pus had been pressed out from the side of the head of the tibia.

When the little patient had been removed, Mr. Fergusson stated that he had hesitated between amputation and excision, but that he thought the present a fair case for the latter operation, which, as was well known, had originated in this hospital. Much discussion had occurred respecting excision of this joint; but he (Mr. Fergusson) thought himself quite justified in having recourse to it in cases like the present. He had not been as successful as could be wished in some of the cases in which he had performed that resection, but no better result would perhaps have followed amputation of the limb.

Mr. Jones, of Jersey, and Dr. Mackenzie, of Edinburgh, had had cases which ended very favourably, and in which scarcely any deformity was left. Indeed, Mr. Jones performed the operation on a patient with whom the hip-joint of the previously sound limb was attacked, after excision of the knee-joint had been performed on the opposite side. Had the limb been removed the patient would have then been thoroughly disabled.

Mr. Fergusson went on to say, that further experience was necessary in order to come to some definite conclusions respecting the operation; but that it might even now be gathered from the twenty-three or twenty-four operations which had been recorded, that some reliance might be placed on this operative procedure.—*Lancet, Aug.* 12, 1854, *p.* 123.

49.—SUCCESSFUL CASE OF EXCISION OF THE KNEE-JOINT.

By Dr. Charles Cotton, Senior Surgeon to the West Norfolk Hospital.

[The patient was a boy nine years of age. The disease had existed three years. The knee was considerably enlarged, limb semiflexed, and foot everted. Chloroform having been given, the limb was forcibly straightened, and secured in this position by a splint. His health having suffered a good deal, he was made an out-patient for a time, and readmitted on Sept. 27th.]

General health much impaired; was pale and sickly. He had no appetite, got but little sleep at night, and suffered much from pain in the knee, which was tender to the touch. The foot, secured to the foot-piece, was with the thigh and knee twisted outwards, the patient having turned the splint above to the inner side, giving the whole limb a very awkward appearance. On removing the splint, the integuments were found sound, and the knee much enlarged; but there did not appear any material fulness from fluid in the joint. The patella was completely dislocated on the outer condyle; the tibia was displaced backwards and outwards; and the condyles of the femur projected forwards and inwards. The whole leg and foot were so greatly rotated outwards on the femur, that the inner ankle was placed

directly forwards, while the external malleolus was inclined completely in an opposite direction. The least examination of the limb caused apparently agonizing pain. The knee was shortly after condemned in consultation; and the choice of amputation or excision being left to the discretion of the surgeon, the latter was determined upon.

Oct. 5th. *Operation.*—The boy, under the complete influence of chloroform, having been placed upon the operating table, the usual letter H incisions were boldly and quickly made. The flaps having been reflected, the patella, being diseased, was at once removed, exposing the joint, and giving exit to a quantity of pus. The remaining fleshy and ligamentous connexions were further divided by cutting close around the bones; and the partially destroyed crucial ligaments were also detached. The ends of the bones, which were carious and destitute of cartilage, being made to project by flexing the limb, the saw was applied to the femur, and a thin slice of its diseased surface was removed. The head of the tibia, which was much damaged, was treated in a similar manner; whilst that of the fibula, also involved, was excised with the cutting forceps. On bringing the parts into contact, by extending the limb, and correcting the eversion of the foot, the ends of the bones were found somewhat separated in front, but tightly wedged together posteriorly, the femur projecting considerably forwards. An additional slice of that bone was consequently cut with the saw, at a bevel angle, in a posterior direction; the soft parts and vessels being protected by a copper spatula; and the projecting edge in front was further bevelled off previously to adjusting the limb upon a ready prepared M'Intyre's splint. One vessel at the bottom of the wound, the azygos articular, spouted at first freely, but no bleeding of importance occurred. The flaps were brought loosely together by six sutures; and the boy was conveyed at once to bed, where he commenced whining and crying, from smarting at the knee, on recovering from the effects of the chloroform.

July 26th. *Present condition of the patient.*—The boy has occasionally presented himself at the hospital up to this time. He attends regularly at the village school, a distance from home. He walks firmly, and with tolerable speed, though with a stooping gait, which he is trying to correct, and which he thinks is owing to his having been obliged to sit so long a time at the hospital. The tendency forwards of the femur is strikingly lessened. There exists considerable power of flexion at the knee. The limb is equally developed with its fellow, and he is able to project it forwards or backwards with ease. Indeed, up to this period, the case, without exception, has been deemed one of a highly satisfactory character.

Remarks.—Formidable resections in the regions of continuity of bones, and *forcible straightenings of the limbs*, in all vicious positions of the knee, *no matter what the stage of disease*, as directed by M. Bonnet, have for several years been neither novelties nor unsuccessful proceedings in my practice at the Lynn Hospital, as the neighbouring pro-

fessional gentlemen can testify, who have embraced the opportunity of witnessing the operations. My excisions of importance in the regions of joints have been, however, confined to four, one of the hip, two of the elbow, and one of the knee. That of the hip—a desperate but extremely interesting case of a girl—led to several months of ease and comfort; and death, as shown at the *post mortem* inspection, was in no way induced by the operation. The two elbow excisions, in male and female adults, ultimately ended unfavourably, as I was obliged to amputate the upper arm in both cases, several months afterwards, at the request of the parties; in the one, for recurring disease of the elbow, and necrosis of the humerus; in the other, owing to the limb having become wasted and useless—in fact, an encumbrance. In the case of the knee (now abstracted from the rough notes of my case-book, upwards of nine months after the operation), I was glad to embrace the opportunity of attempting the saving of the condemned limb by cutting out the knee—a proceeding I was about to put in practice so long ago as 1845, in a case of scrofulous degeneration of the joint, but for the negative sanction of the physicians, and a deference to a surgical opinion in favour of amputation. The youth of the patient, and the anæsthetic value of chloroform, together with my experience, which justifies no extreme fear of interference when the larger joint ends of bones have become severely diseased, led me to give a trial to excision in the present instance; and, strengthened by the result, and the reported cases of Mr. Jones, of Jersey, and also by the very elaborate paper of Dr. Mackenzie in the 'Monthly Journal,' I see no reason to regret my disregard of the strongly expressed and somewhat hastily promulgated censures of the Edinburgh authorities, for whose opinions in general I have the highest respect. I am no exclusive reporter of wondrous cures, neither do I presume to lecture upon an individual case, for, by the aggregate of successes and reverses, operative surgery can alone be fairly tested. I think, nevertheless, that the "*settled inexpediency*" of the operation remains yet unproved; and leave, therefore, further experience to determine upon the propriety of attempting the saving of the limb by cutting out the joint in certain cases of incurable disease of the knee.

At the hazard of incurring the charge of "recklessly risking life," "unprofitably spending time," and of having taken a step in surgery "in the wrong direction." I publish the notes and these few crude remarks on a case, the progress and termination of which has afforded here considerable interest and pleasure.—*Association Med. Journal, Aug.* 4, 1854, *p.* 696.

50.—*Case of Excision of the Knee-joint.* By Dr. Gurdon Buck.—[This case of excision of the knee-joint, related in the 'New York Medical Times' for March, 1854, was successful.]

A transverse incision was made from one condyle to the other,

across the lower margin of the patella. A longitudinal incision intersected the middle of this, and extended four inches above and below it. After the flaps had been dissected up, the joint was opened by an incision across the ligamentum patellæ, and also across the lateral ligaments. The adhesions of the articular surfaces were broken up by gradual forced flexion. A slice was then removed, with the common amputating saw, from the inferior surface of the condyles of the femur, including the pulley-like surface intervening between. Special care was taken to make this section on a plane parallel with the surfaces of support upon which the condyles rest, when the body is erect. The articular surface of the tibia was next removed on a level with the upper extremity of the fibula. These broad fresh-cut bony surfaces, which were very vascular and healthy, admitted of accurate coaptation without stretching the tendons and other parts in the ham. To secure them in close contact, a flexible iron wire was passed through both bones on each side, and the two ends twisted and left out between the flaps of the skin. The patella, being disorganised and softened, was removed, except the superior margin. The flaps of integument were brought together with sutures and adhesive straps, and the limb placed in a fracture-box. The constitutional fever was moderate, and disappeared within a fortnight. At the expiration of five and a half weeks, the wires, having become loose, were removed. No exfoliation was produced by their presence. At the end of nine weeks, the wound had entirely healed, and the patient could raise the limb from the bed. Slight motion between the bones was perceptible in the direction of flexion and extension, but none laterally. At the expiration of about three months, the patient was allowed to leave his bed, and use his crutches. On Feb. 1st, 1854, he had been steadily improving up to the present time, and walked with a cane only. There was no mobility between the bones. The difference in length between the two limbs was one inch and a half, which permitted the foot to clear the surface of the ground without the body being thrown to the opposite side.—*Association Med. Journal, Aug.* 11, 1854, *p.* 721.

51.—REMARKS ON THE LINES OF INCISION SUITABLE FOR OPERATIONS AT THE ANKLE-JOINT.

By T. P. Teale, Esq., F.L.S., Surgeon to the Leeds Infirmary.

Operations at the tarsus having become frequent, and the modes of performing them various, it is desirable to determine generally upon some operative proceeding which would afford easy access to the tarsal bones, and at the same time be compatible with the removal of the entire foot at the ankle-joint, should the disease of the bones be found during the progress of the operation too extensive to allow of a reasonable hope of the preservation of the foot.

The following mode of operating appears to me to afford these advantages.

A transverse incision is made across the sole of the foot, commencing about three-quarters of an inch in front of one malleolus, and ending at a similar point in front of the other malleolus. A second incision is then made in the median line, beginning over the tendo-Achillis, on a level with the ankle-joint, and joining the former at right angles in the sole of the foot. The two lateral flaps thus marked out being next dissected upwards close to the bones, the calcaneum and astragalus are freely exposed. By division of their ligamentous and tendinous connexions, one or both of these bones may be easily removed; and should it be thought desirable to remove also other bones of the tarsus, they may be readily reached by extending the median incision a little forwards. If, from the great extent of disease, it is found necessary to remove the entire foot, it may be accomplished by uniting the two extremities of the transverse incision by a curved incision across the dorsum of the foot. Even where it is originally intended to amputate at the ankle-joint, the operation by two lateral flaps, as here described, affords much greater facilities, as I have experienced, than the ordinary mode of detaching the soft parts in one flap or bag from the calcaneum.

My present object being chiefly to describe a mode of operating, and not to discuss the general question of the propriety of removing one or more diseased bones of the tarsus, I will merely on the latter point state my conviction, that such operations are of doubtful propriety when the disease is of a strumous character, originating in the cancellous structure of the bones; since, in this affection, after the removal of one or more carious bones, the exposed articular surfaces of the neighbouring bones may appear healthy, even while their cancellous structure is in an early stage of the disease. Whereas, in those cases of caries which have originated in disease of the ligaments or synovial membrane, the full extent of the disease is more likely to be exposed to the observation of the operator.

This objection, founded upon the strumous character of the disease, applies with much less force to the excision of joints like the elbow, which allow of the removal of the articular ends of all the bones entering into their composition.

[Mr. Teale illustrates his opinions by an interesting case from notes by Mr. J. W. Greenwood, the resident assistant surgeon of the Leeds Infirmary. The man was twenty-four years old and had disease of the right tarsus; several sinuses communicated with the astragalus and calcaneum. The excision of the diseased bones became necessary.]

July 30.—The patient having been placed under the influence of chloroform, Mr. Teale commenced an incision by plunging the point of a French bistoury down to the bone in front of the outer malleolus, at a distance of three-quarters of an inch from it. This incision was carried across the sole of the foot, and ended at a point situated three-quarters of an inch in front of the inner malleolus. By this incision

the soft parts were divided down to the bones, and the calcaneo-cuboid joint opened. A second incision was now made in the median line, beginning posteriorly at a level with the ankle-joint, and extending along the tendo-Achillis, and under surface of the calcaneum, until it met the former incision in the sole of the foot. The two lateral flaps thus formed being dissected upwards, and the ligamentous connexions of the calcaneum divided, this bone was quickly detached. The under surface of the astragalus being now ascertained to be carious, this bone was in like manner quickly removed. The median incision was now extended a little forwards, to give more easy access to the cuboid, which was also diseased. The removal of this bone occupied a little more time than that of the former, but it was accomplished without difficulty. After a careful examination of the articular surfaces of the tibia and fibula, and the exposed tarsal bones, no further disease was observed. A few small vessels were secured. The flaps were placed in apposition, and covered by wet lint, supported by a light bandage.

Six hours after the operation the wound was cleansed from clotted blood, and, after being united by sutures, was covered with wet lint. The limb was laid on the outer side, in a flexed position upon a leg-splint.

On examining the bones which had been removed, the cartilages were found ulcerated in several places, and the whole cancellous structure softened, so as to admit of their being readily cut by a scalpel.

August 3.—He has proceeded favourably. Sutures removed; wound united at several points; no sloughing. The flaps supported by adhesive straps, covered with lint wet with myrrh lotion.

[The case seems to have been tedious but successful. On May 3, 1854, *i. e.*, nine months afterwards, the man had the power of freely flexing and extending the foot, and could bear firm pressure on the heel, but still a little matter was discharged from two sinuses.]—*Med. Times and Gazette, May* 27, 1854, *p.* 539.

52.—ON THE AFTER CONSEQUENCES OF AMPUTATION.

By John Hamilton, Esq., Surgeon to Richmond Hospital, Dublin.

The first and most pressing danger after amputation is hemorrhage. It may arise from half an hour after the operation to any number of hours or days, till union in the stump is effected. It is this that makes the surgeon careful to have his patient watched by an assistant always at hand. I cannot forget the anxious hours I have spent, when, a student, I have been left to watch a stump after amputation. The suspended terror with which I have raised the sheet, from time to time, to see if blood was trickling down, or whether the bloody oozing, which always flows from the lips of a stump, was hemorrhage or not. If the bleeding is only trifling, I would have you not inter-

fere ; compression on the face of the stump and the application of cold is often sufficient to check an inconsiderable bleeding, which your opening the stump would only tend to render a considerable one ; but should the blood flow freely, the stump be swollen, and clots appear between the spaces of the sticking-plaster, you must open it forthwith, and search for the bleeding vessel. Before, however, the dressings are removed, firm pressure should be applied over the femoral artery, by a steady assistant. This is much better than the tourniquet ; it causes the veins to become turgid and add to the bleeding, which sometimes even comes from the femoral vein itself. When you have no one to help you, there is no choice but to apply the tourniquet. Then carefully clean the face of the wound of the clots which you will nearly always see covering it. The blood will now be found to come in three ways :—first, in a general oozing from the stump. In this case, if there are one or two spots whence the blood flows with more rapidity, you may take up the vessels ; but, in this general bleeding, it is best to cover the part with shreddy lint, and press steadily with your fingers on it for some time. The bleeding will usually stop, or at least that bleeding which comes from small branches, temporarily increased or excited by the inflammatory action which has begun in the end of the amputated limb. Those of larger size will then be more readily found and secured. Then put together the sides of the wound with sticking-plaster, or compress and bandage, giving up all hope of union by the first intention.

A more serious hemorrhage, though happily very rare, is from the femoral artery itself. This may occur early, from the slipping off of the ligature, from its not having been tied sufficiently tight ;—or at a later period, when the ligature has been drawn off, but no proper clot or union exists at the end of the vessel.

The third kind of hemorrhage is from the femoral vein, and is sometimes very profuse. At the time of the operation there is occasionally troublesome bleeding from the femoral vein, which ceases on the slackening of the tourniquet and removal of the tourniquet bandage ; or is readily restrained by putting a small compress of lint over the cut end of the vein. Most surgeons dislike applying a ligature round a vein, but if the other means fail this must be done. I removed the leg of a young man below the knee, for disease of the tarsus and ankle-joint : on the twentieth day after the operation, when all the ligatures had come away for several days, he was seized in the middle of the night with violent hemorrhage, not *per saltum*, but in a free flow, and of a dark colour. Pressure on the femoral artery did not stop it. All the stump had united except a small portion in the ham, which went like a large fistula high up, and from which the hemorrhage came. Pressure over this part with lint saturated in a strong solution of alum and in turpentine, stopped the hemorrhage, which, however, returned again and again, but was finally completely arrested by laying open the unhealed cavity from whence the hemor-

rhage came, and laying the compresses over an ulcer in the popliteal vein, from which the blood was seen to flow.

The cut surface in amputation is almost always large; and in sudden accidents, in muscular men, or in fat women, the wound you have made, particularly in the thigh, is very extensive indeed. Sometimes the whole, except where the ligatures are, will unite by the first intention; this, however, you can expect to happen but seldom;—generally, the external or tegumentary lip unites, while the inside is still ununited, and discharges pus, which you should carefully and gently express.

The smaller ligatures come away about the tenth day; the ligatures on the larger arteries, as the femoral, humeral, or posterior tibial, after the fourteenth, or longer; I have known even a month elapse before the last ligature came away. You should at each dressing, after the eighth day, pull gently at the ligatures; some of those on the smaller muscular arteries come readily away; but I use the word *gently* emphatically, because I witnessed a rough tug at a ligature once bring on a very alarming hemorrhage.

If the wound does not unite by the first intention, its progress is pretty much as follows:—for the first two days all goes on well, but the third day you hear that the patient has passed a restless night; he complains of pain in the stump, and his face is flushed, skin hot, pulse quick, and the tongue loaded. After removing the lint dressing, the stump appears swollen and red, and the bandage looks too tight; you slit it up and remove one of the strips of plaster, when the wound at once gapes, no union having taken place, and a quantity of thin, bloody matter gushes out; the patient complains of much tenderness, and can scarcely bear the gentlest compression by the sponge. Two things should be observed: first, not to put too many strips of plaster on, or too tightly, as room should be left for the matter to escape; and, second, not to put the bandage on too tightly, or it will cause much uneasiness: let it be applied merely firmly enough to give support.

The Bone.—The usual course is for a lymphy exudation to cover the surface of the bone, which becomes adherent to the soft parts—this is when the greater part of the stump heals by the first intention; when it does not, the surface of the bone, particularly the cancellous structure, throws up granulations, and union by the second intention is accomplished. Finally, the end of the bone is covered by a firm, fibrous material, its edges are absorbed, and it becomes conical. There is, however, trouble from the bone in two ways: first, the action of the saw sometimes seems to kill the sawn surface of the bone; and after the stump has refused to heal for a long time, the centre remaining open and discharging thin matter, the bone can be felt hard and distinct at the bottom of the wound. At length it is perceived to be loose, and can, with a forceps, be withdrawn through the unhealed opening, or if not, an incision should be made, and it should be

withdrawn. It sometimes presents a curious appearance ; a perfect flat ring of exfoliated bone, about one-eighth of an inch or less of the end of the bone having become dead or separated entire. Another way is this : you see that the end of the bone is pressing against the upper part of the stump, and that the integument there is strained and tense in consequence ; the bone being drawn upwards and forwards by the action of the psoas and iliacus muscles, while the soft parts are drawn downwards and backwards, partly by their own weight and also by the powerful traction of the hamstring muscles. You will best counteract these forces by putting a splint of wood, either flat or scored, at the under and back surface of the limb, with a well-applied bandage, and the tension against the end of the bone is at once relieved. If you do not do this or it does not answer, the part against which the end of the bone projects and presses becomes white and glossy, then red and painful and very tender, then fluctuates, and finally ulcerates, and the end of the bone can be felt with a probe ; but though you would think the bone would exfoliate, it generally does not, but unites by granulation with the neighbouring parts, and all goes on well. A stump that unites by the first intention, or, at least, that heals soon, is much more likely to be a good plump one ; when the healing is tedious from unhealthy action or diseased bone, no matter how well the operation has been done, the stump will be conical.

Now, with regard to the nerves I have not much to say—they rarely give any trouble. Nerves in a stump are, as was ascertained long ago by Mr. Langstaff, found, after the lapse of some time, to have bulbous extremities. This, I may observe, seems to be the case when nerves have been divided from other causes. In a case of caries of the petrous portion of the temporal bone, where the portio dura was destroyed and completely divided, as it passed through the carious spot, the divided end of the nerve next the brain was bulbous, the end of the distal portion not so.

If, therefore, you find, as in these plates and preparations, the ends of the nerves in an old stump ending in bulbs, you are not to consider them as diseased ; nor if any pain has been felt that they are the cause of that pain ; nor can I say that cases where they have been removed by operation have been satisfactory. Stumps are usually not very sensitive ; but occasionally, from a constitutional, I believe, rather than a local cause, the most violent pain is experienced,—a pain, apparently the most intolerable, and resembling tic-douloureux —absent for a time, but returning in paroxysms of dreadful severity.

The case of the Marquis of Anglesea, whose leg was amputated at Waterloo, will be familiar to you : nothing that was tried gave him any permanent relief. The great Nelson, also, suffered from this nervous affection, after removal of the arm above the elbow, and many years of his life were rendered miserable by it.—*Dublin Hos. Gazette, Aug.* 15, 1854, *p.* 210.

53.—CASES OF ARTICULAR DISEASE ILLUSTRATING THE ADVANTAGES OF THE ACTUAL CAUTERY.

Under the care of Prof. Syme. (Reported by Dr. Joseph Lister.)

[The following interesting cases occurred in the practice of Prof. Syme, of Edinburgh. The first case commenced after cold and fatigue, about four months before admission into the Edinburgh Royal Infirmary. The pain in the shoulder was at first intense.]

On admission she complained of constant gnawing pain in the left shoulder, and extending down the limb as far as the elbow, and sometimes to the fingers; when in the sitting posture she held the affected limb with the other hand, to ease the pain; the arm was also affected with a feeling of numbness and weakness; and although the shoulder was not very tender on pressure, and very gentle passive motion of the arm could be performed, through a considerable angle, without pain, yet any attempts on her own part to move it, produced great aggravation of her sufferings. As a result, no doubt, of habitual disuse, the muscles about the shoulder were much atrophied, and this caused a remarkable apparent prominence of the bony points, viz., the spine of the scapula, the acromion, the anterior border of the outer part of the clavicle, and the head of the humerus. The shoulder had an appearance that suggested at first sight the idea of dislocation.

On the 3rd November, the patient being under the influence of chloroform, Mr. Syme cauterized thoroughly the skin over the anterior and posterior aspects of the joint, rubbing a red-hot cautery iron freely backwards and forwards four or five times over each part. It had the effect of raising and rubbing off the cuticle, but did not char the skin. An hour afterwards the patient was suffering but little pain.

Nov. 4. Said, with a smiling countenance, that she slept well last night, the first time for four months, and feels now no pain save that of the burns.

Nov. 5. A poultice was applied yesterday; the pain of the burn is now gone, and she feels *no pain at all.* Says that she has not only lost all pain, but also that the feeling of numbness is gone from the limb, and that she seems to have more power in it. The burned parts present a white sloughy appearance.

The poultice was continued till the sloughs separated, when simple cerate was substituted for it, with the view of retarding, rather than promoting cicatrization.

Nov. 12. To-day she has been trying to lift the arm, and felt none of the old pain in the attempt.

Jan. 31, 1854. She has to-day left the infirmary. She has for some time past been gradually acquiring more and more power in the limb; she can move the arm backwards and forwards for a considerable extent, and even raise it slightly. The movements of the forearm are free; there is no tenderness whatever about the shoulder. The return

of the use of the limb has been accompanied with a restoration of the fulness of the muscles, so that there is now no difference between the contour of the two shoulders. She continues quite free from spontaneous pain.

I saw her again towards the end of May. She was still quite free from pain, and there remained only some stiffness about the joint that prevented her from raising the arm to the full extent.

Case 2. *Disease of Shoulder-Joint; Actual Cautery; Cure.*—Lilly Kay, aged 50, admitted March 23, 1854. Has generally enjoyed good health, except that for the last twelve years she has suffered inconvenience from what she supposed to be rheumatism in the right shoulder, characterized by shooting pain, occurring more especially when she attempted to lift anything. In January last the limb became completely disabled from increase of the pain, which now assumed a gnawing as well as a shooting character, and also began to be felt in the elbow-joint, and in the arm, forearm, and hand. At this time she first observed the existence of swelling about the shoulder-joint.

The pain continued to increase till the time of her admission into the infirmary, when it was exceedingly severe; not constant, but frequently keeping her awake at night. She was unable to raise the arm from the side, and had a sense of weakness in the limb, and some stiffness of the hand. There was considerable swelling about the shoulder joint, which was tender on pressure, particularly at the anterior and posterior aspects. On the day of admission, Mr. Syme applied the actual cautery freely over the anterior and posterior parts of the joint, the patient being under chloroform. From this time she lost the old pain entirely, or at least was uncertain whether that which she still felt was not altogether that of the burn; and though the pain of the burn was considerable till the sloughs separated, yet it was much less distressing than the old pain, for which it was substituted, so that she slept much better than before the application of the cautery. The sloughs came away on the 1st of April, on which day she had a slight return of the old pain near the wrist, but it has not occurred again, and she is now (4th April) quite easy. The swelling about the shoulder has almost entirely disappeared, and there is little, if any, tenderness; the sores are granulating healthily.

April 14. Continues quite easy.

She was discharged on the 27th of April; I saw her about a month after, and she still continued free from pain.

Case 3. *Disease of Wrist-Joint; Actual Cautery; Cure.*—Janet Archibald, aged 32, admitted November 2, 1853. Rather a weakly subject. In October last she "took a shivering," without any particular exposure to cold, and a pricking pain came on in the left wrist, which increased for a time, and was accompanied with swelling. She applied poultices medicated with acetate of lead, and under their use a great improvement had taken place at the end of five weeks, when she got fresh cold in it, as she says, and it became excessively painful;

the pain continued ever after till her admission, and although its extreme severity was then somewhat mitigated, yet it kept her awake a good deal at night; it was partly dull and heavy, and partly of a shooting character, and extended down through the hand and fingers. There was also an occasional tingling sensation in the fingers, and a sense of unnatural weight in the limb. A great degree of swelling existed about the wrist-joint, particularly on the dorsal aspect, and this part when manipulated gave a feeling very like that of fluctuation, so that her medical attendant had been desirous to open what he had supposed a collection of matter there.

Mr. Syme regarded the condition of the wrist as almost hopeless, but as he thought suppuration had not yet occurred, he determined to give the limb a chance with the actual cautery, which he accordingly applied on the dorsal aspect in two lines, crossing one another over the articulation. The pain and swelling both diminished greatly during the first four weeks after the cauterization; some aggravation of the symptoms then occurred for a time, but as the sore was still open, Mr. Syme thought it unnecessary to interfere further, and a gradual improvement afterwards took place, till at the time of her leaving the infirmary (Feb. 14, 1854) there was scarcely any swelling and very little pain.

I saw her again on the 10th of June, there was then no swelling whatever about the wrist, and no uneasiness except a painful feeling of weakness when she exerted it much.

Case 4. *Disease between the Atlas and Axis; Actual Cautery applied with great benefit.*—Thomas Smith, aged 27, admitted June 20, 1854. Generally enjoyed good health till eighteen months ago, when a stiffness of the neck came on without any assignable cause, with pain when he turned round his head on the pillow; the pain increased greatly, and deprived him altogether of sleep for seven weeks, during which time he lost three stones in weight. There was severe pain in the head as well as in the neck, aggravated to an extreme degree by either nodding or turning of the head, particularly the latter, which, indeed, he at last never did without turning the rest of the body also. He applied to numerous medical men in Birmingham, where he lives; and blisters and caustic issues were repeatedly applied to the back of the neck, but never gave more than very slight and very transient relief, and he says that from the commencement of his complaint, he never had one minute's freedom from pain, except during sleep, till he came here.

At this time he was, according to his own account, about as bad as he had been at all. His countenance wore a peculiar expression of mingled suffering and apprehension, as Mr. Syme expressed it. He complained of severe pain in the neck and head, aggravated by any sudden movement, so that there was a great constraint about all his actions. He always kept his head bolt upright, except when in bed,

and could neither lie down nor get up without supporting his head with his hands; he never turned his head without the rest of the body, but gentle nodding was not very painful. There was great swelling of the upper part of the neck, and he could only open his mouth a little way; deglutition was extremely difficult, and a remarkable prominence of the bodies of the upper cervical vertebræ was to be felt in the pharynx.

On the day after his admission, Mr. Syme applied the actual cautery over the spinous processes of the upper cervical vertebræ; the man was not under chloroform, and said he hardly knew whether the pain was greater even at the moment, than what he had experienced from caustic issues, and immediately afterwards he told us that he did not feel the pain of the burn at all. Next day he found less pain in moving the head, and in two or three days his countenance assumed a cheerful aspect. A steady daily improvement has since taken place in his symptoms, and at the present time (July 15) he has no pain whatever when he sits at rest, and can also use strong and active exertion without uneasiness, and no longer requires to support his head in lying down or rising; he can turn his head round pretty freely and look up to the ceiling, and it is only in sudden movements of the neck that he feels any pain at all. The swelling of the neck has greatly subsided, and he can open his jaws wide, and swallow with comparative facility. The sore on the neck is almost healed, and he talks of leaving the hospital in a few days as cured.

Remarks.—The above cases speak for themselves; and I might add several others, that exemplify in an equally striking manner the beneficial effects of the actual cautery in certain forms of articular disease. It will be observed that it is by no means so painful a remedy as is generally supposed, and also that its good effects are more than can be attributed to the mere discharge of pus from the sore which it produces, seeing that a great improvement commonly occurs within a few hours of its application, and long before suppuration is established.

It is now many years since the use of this means of counter-irritation was introduced into Great Britain by Mr. Syme; but although a constant series of successful cases have since continued to demonstrate its value to those who have witnessed his practice, yet I am satisfied that it has not hitherto been sufficiently generally appreciated. Casi IV. is an example of its efficacy against a most formidable disease, where caustic issues had been long tried in vain. I believe many limbs and lives have been sacrificed that might have been saved by the actual cautery, and by it alone; and having been myself very strongly impressed with the importance of the subject, I should be truly glad if any surgeon who may have hitherto overlooked it, should be induced by the above report to inquire more closely into its merits. —*Monthly Journal of Medical Science, Aug.* 1854, *p.* 134.

54.—*Veratrine Ointment as a Local Application in Scrofulous Affections of the Joints.*—Dr. Klingner has employed, with success, an ointment, consisting of veratrine, gr. 5 to 10, dissolved in spirits of wine, and added to axunge ℥i. to promote absorption in scrofulous diseases of the joints. He considers its use inadmissible where heat, redness, or other signs of active disease exist; but when the affection has become chronic, he directs the bulk of a small bean of the ointment to be steadily and gently rubbed over the affected part, for a quarter of an hour daily. It produces a tingling sensation, with local increase of temperature, and promotes a restoration of the tissues to a state of health. In some instances, the itching which is caused proves distressing; he then omits the ointment, and uses friction with glycerine in its stead for a few days. The formication which attends the application of veratrine may extend over the entire body, and is often accompanied by an eruption resembling urticaria; there can be no doubt of its decided local stimulating powers, and that it is capable of materially aiding absorption in chronic disease. We ought also, possibly, to ascribe some part of the beneficial results in Dr. K.'s cases to the friction with which the ointment was applied. —*Glasgow Med. Jour.—Dublin Hosp. Gazette, Feb.* 15, 1854, *p.* 31.

55.—ON FRACTURE AND EXCISION OF THE ENDS OF BONES.

By J. Russell, Esq., Merthyr-Tydfil.

[Mr. Russell reports some interesting cases to show the practicability of confining separated and very moveable portions of bone by means of ligature applied immediately to the ends. This idea occurred to him in 1839, although he learned afterwards that Valentine Mott used the same in 1826. Dr. Mott thinks that the seton will be sufficient when the bones are in contact, or nearly so, and that when they are not so, nothing will answer better than resection of their fragments and their union by means of wire. Mr. Russell recites the following cases:]

Case 1. William Bennett, aged nine years, was brought to me about Christmas 1843. I was told that his injury had been received twenty-seven weeks previously. He had an ununited fracture of the humerus, at the point of junction of the middle and lower thirds. It was perfectly pliable; so that, when the upper arm was attempted to be raised to a horizontal position, the lower portion of the humerus, with the forearm, hung perpendicularly. Many fragments of bone had escaped during the progress of the case. The wounds had healed. A free incision was made on the outside of the arm, where the lower portion of bone was very prominent. I exposed the ends, and removed their points, endeavouring to do so at a point which would leave the denuded ends with a surface of the size of the natural circumference of the bone. The lower portion had penetrated and united to the triceps muscle. The ends of the bone were very pointed, and

were connected by ligament; and a third detached portion, about half an inch long, was included in the ligament. I drilled a canal obliquely in each end, in the cylindrical portion of the bone, which terminated at about an inch from the ends. A piece of platina wire was passed through the canals, and twisted into a ligature. A slight degree of fever ensued, which lasted a few days. Very little suppuration took place, and the ligature separated on the thirteenth day, perfectly free from any exfoliated bone, and uncorroded. The bone united in the ordinary period, a month; no exfoliation followed, and the wound healed readily. The patient had in 1849 a good, firm, and useful arm, and was earning his living as a haulier in a colliery.

This case was reported in the Lancet, July 13th, 1850.

Case 2. Rees Jones, collier, aged 49, applied to me April 18th, 1851, with disease of the right elbow-joint; it was far advanced and extremely painful. There were wounds, which discharged freely. Accumulations of matter occurred from time to time, and free incisions were made for its escape, but no relief followed. He was very much emaciated; but he declared he was not much thinner than he used to be, and that he had been a tolerably healthy man through life. These two last statements, I was afterwards told, were not correct, he having been a sickly man for many years. He was anxious that some operation should be performed, if possible, without losing his arm. As it appeared probable that the emaciation proceeded from the continual suffering and drain from his arm, excision of the joint was performed on May 30th. Canals were drilled in the cylindrical portion of the bones, and a piece of strong twine was passed through, and the bones were brought together by tying it tightly. The arm continued very painful after the operation, and, about the end of seventeen days, the ligature remaining firm, it was cut through and removed. No relief followed. But the pain continued severe and constant, and the arm was amputated at about the middle of the humerus in August. The ends of the bones were found covered by a gelatinous pulp, and rough and carious. The pain continued to affect the stump. He was also subject to violent attacks of pain, which he referred to the right side of the abdomen. He gradually grew worse, and died in May, ten months after the removal of the arm.

Examination of the body. On opening the chest, the lungs presented one uniform black mass, which appeared to result from spurious melanosis. The intestines were amassed by cohesions. The liver was of the ordinary size, but, upon being cut into, presented a mottled nutmeg-like appearance.

Case 3. John Williams, aged 58, a railway haulier, fractured his leg Nov. 6th, 1852, from his foot becoming entangled in the wheel of a loaded waggon while endeavouring to unfix it. The tibia was fractured obliquely at the junction of the middle and lower third. No apparent injury had occurred to the skin. The limb was set, and put up in the ordinary way, with side splints.

Nov. 7th. He had suffered great pain. The leg was covered with vesicles; most of them were filled with a dark coloured fluid. The foot was of low temperature. There was but little constitutional disturbance. Warmth was ordered to be constantly applied.

Nov. 8th. The foot had recovered warmth; the vesicles were subsiding; and a distinctly marked slough, about two inches in diameter, was present over the seat of fracture.

Nov. 22nd. The slough was removed, and the prominent pointed extremity of the lower portion of the tibia could be seen in the centre of the wound, and much raised. It was denuded of periosteum, and blanched.

Nov. 23rd. After enlarging the wound, I removed by the saw the points of both upper and lower portions. Upon again examining the wound, an isolated large piece of bone was discovered lying at the back part of the wound, strongly held by the interosseous ligament, and required much force for its engagement. Canals were then bored in the cylindrical part of the bone, about three-eigthths of an inch long at the front aspect of the tibia; and a piece of copper wire (No. 16) was passed through them, and twisted tightly, till the ends of the bone came firmly in contact. The limb was placed on a pillow, and supported at the sides.

Nov. 28th. Everything had progressed favourably. The lower portion of bone had fallen slightly backwards, but was easily raised by the ligature. The ligature appeared slightly loosened.

Nov. 30th. The ligature was decidedly loose, and a small piece of exfoliated bone, about the size of a grain of rock powder, came away from the side of it. Exfoliation was still going on from the lower portion

Dec. 2nd. The upper portion, as well as the medulla, were granulating healthily: the granulations surrounded the wire closely.

Dec. 3rd. The lower portion had again fallen back a fourth of an inch, and was apparently released from the ligature.

Dec. 4th. The ligature came away altogether by using very small force. It was free from any attachments, uncorroded, and not altered in any respect.

Dec. 5th. The bones were connected by a band of granulations, which could be stretched by extending the leg.

Dec. 7th. He was progressing favourably. A collection of matter had formed over the lower end of the fibula. The limb supported itself while lying on a pillow.

Dec. 13th. Firm union was advancing, and everything had progressed favourably since the last report.

Jan. 3rd, 1853. The wound was filling up. By grasping the leg above the seat of fracture, and raising it, it raised and supported the lower portion.

Jan. 13th. Union was quite firm. The limb was taken out of the cradle, and laid unsupported on a pillow. An abscess formed upon the heel during the severe weather, and the wounds healed slowly; but everything continued to progress favourably.

In August 1853, the leg might be said to be perfectly sound, and the shape remarkably good. It was two inches shorter than its fellow.

Case 4. Lewis Evans, aged 22, complained of an affection of his elbow about Christmas 1851-52. His right foot had been previously affected, and at present there is an open sore on it. Counter-irritation and constitutional treatment were pursued; but suppuration took place, and wounds opened about the elbow-joint, about twelve months ago; and scrofulous disease of the joint was very evident. The wounds and discharge continued, and about last Christmas the idea of excision of the joint was entertained; but his constitution appeared so much impaired that it was not thought advisable to operate then. Many of his family are the subjects of scrofula in various forms. One has disease of the hip-joint, and one died of phthisis. Twelve months afterwards, the disease of the elbow and the constitutional symptoms appeared to be much the same, and to have been stationary for the last six months; and the wounds having put on a more healthy appearance, and the arm remaining useless and helpless, so much so as to require the assistance of its fellow for all movements, excision was determined on.

The operation was performed June 14th, 1853. The humerus was found to have lost its periosteum for a considerable distance, and a large portion of bone was required to be removed. After removing the olecranon, a deep rough notch could be felt on the anterior aspect of the ulna, about a quarter of an inch from the sawn end. This required the removal of a second piece from the ulna. The radius appeared sound. Holes were then bored through the cylindrical part of the bone, perpendicularly or nearly so, into the medullary cavity or centre of the cancellated structure. Common bottling wire was then passed double through the holes, and twisted till the ulna and humerus appeared to be in contact. Little constitutional disturbance followed the operation. On the second day, a very obtusely angular splint was applied to the inside of the arm.

June 15th. The splint was discontinued.

June 17th. The patient walked to my house a distance of five hundred yards.

July 14th. The ligature was quite firm. No pain was caused by pulling it. The wounds were granulating and healing.

July 15th. A large portion of the wound healed; the ligature remained as before. The thickening round the humerus was decreasing.

July 18th. He had felt considerable pain in his arm the day before, apparently caused by a small abscess over the former site of the internal condyle. I pulled very hard at the ligature, which was still firmly attached, which caused no pain. He had no return of pain.

July 21st. The wounds continued to heal fast. The ligature still endured a hard pull without yielding. The arm continued easy.

Aug. 3rd. The ligature continuing sound, it was pulled very hard and yielded about half an inch; very probably released from one bone. A quill was then passed through a loop in the wire, and a quantity of worsted was twisted round between the quill and arm.

Aug. 6th. The worsted had made a great depression. The wire was untwisted, and, while attempting to pull it out, it became released altogether. The arm was gradually acquiring strength, and the wounds were healing.

Aug. 14th. The upper arm was much inflamed, swollen, and hard; an abscess pointed in front of the head of the radius, and was opened.

Aug. 17th. A free discharge of pus had taken place, and the arm was altogether much improved.

Aug. 19th. The arm was much better.

Aug. 30th. The patient continued to improve. The thickening of the humerus and the enlargement of the arm, generally, were diminishing.

Sept. 26th. Several small wounds were still open. The patient could now raise his arm, and touch his upper lip with his thumb, unassisted.

Remarks.—I will now offer for consideration the most striking points, as they appear to me, of the foregoing cases, and my deductions from them. The object which Dr. Mott or M. Flaubert had in view when they first adopted the use of wire ligature in cases of ununited fracture, does not appear from the above account; nevertheless, whether it was used as a connecting agent only, or with the object of exciting action in the ends of the bones, is, I think, not material. The object at which it is desirable to arrive is that which experience proves or renders probable. In the sixth case of Dr. Mott, the expression occurs, "joined by means of iron wire." In the ninth case (which he considers as unique, it being an example of intra-uterine non-union), we find the words, "and *connected them* with silver wire;" and part of the concluding sentence of the report is "resection of the fragments, and *their union* by means of wire." In all these cases, the wire appears prominent as an agent of connexion. My observations lead me to conclude that no action favourable to the union of bone is caused by the presence of the ligature. I view it as a perfect parallel to ligature and sutures in other living structures; and I believe that none think the presence of sutures in the integument or elsewhere favourable to healing otherwise than as an agent of approximation. In Case 3, the bones and wire were exposed to view, and the granulations from the bone closely surrounded the wire, which was copper; and no pain appeared to be caused by pulling the wire, which had remained in the bone long enough to have produced irritation, if calculated to do so. And in Case 4, the frequent and hard pulls produced no more sensation than to allow the patient to acknowledge that he felt it. In Case 1, the boy complained of a pricking pain for a part of the time of the presence of the wire in his arm, which I think from its nature, may be justly referred to an angle in the wire. In Case 2, the patient suffered excessive pain, which had existed previous to the operation, and continued after the removal of the ligature, and even after the amputation of the limb; and the man's condition of body was, I think, sufficient to account for the failure.

My conclusions are, that wire ligature is a safe, useful, and certain agent for conducting points of severed bone into apposition, and confining them in that condition till either that union may have taken place, or that the soft parts immediately surrounding the seat of injury shall have adapted themselves to the position of the bones. Although ligature has hitherto been applied only to cases of ununited fracture (*i. e.*, permanently ununited), I advance the case of John Williams, No. 3, which will perhaps be admitted to show its utility in recent fractures, when the bones are very moveable; and I think it would be found very useful in military surgery or elsewhere, when the removal of the patient soon after the injury may be required, or such a necessity feared: and I would suggest the experiment of wire ligature in veterinary surgery. My present impression is, that the material of which the ligature consists does not signify. Dr. Mott has used silver and iron wires; I have used platina, copper, and iron wire, and common twine; and I have no reason to suppose that the texture of the last had any influence on the unfavourable result of the case. I did on one occasion contemplate the using of catgut; but I feared that the knot would yield when it became sodden by the discharge, and so rejected it. The applicability of ligature in recent cases of fracture would bring it into a much wider field of utility than that to which it has apparently been hitherto confined. And it appears that ligature is tolerated by bone with equal patience, both in recent cases of injury and chronic cases of injury and disease.—*Asso. Med. Jour.*, *June* 23, 1854, *p.* 547.

56.—ON COMPOUND FRACTURES.

By Dr. Samuel G. Wilmot, Surgeon to Steevens' Hospital, Dublin.

Compound fracture may be produced in two ways: either the violence may be so applied as at the same time to break the bone and tear the skin; or the force may at first merely break the bone; then the continuance of the same force, or another, applied in a different direction, may drive the upper fragment through the skin. In the case before us, the upper fragment of the fibula protruded through the integuments. Now, experience teaches us, that where the bone protrudes, making a small punctured wound, the case frequently takes a much more unfavourable course than where the skin has been extensively wounded; gangrene, fascial inflammation, and abscesses, are far more apt to occur. I have frequently observed this to be the case; and it is the result of Mr. Cusack's vast experience, that where the fibula, in particular, protrudes, making a small punctured wound, the case is most prone to run an unfavourable course. You see, then, that so far from measuring, as you would be apt to do, the evil consequences likely to result from a compound fracture by the degree of injury done to the soft parts, on the contrary, within certain limits,

a small punctured wound will generally lead to worse results than where the skin is extensively lacerated.

The first step you have to take, when called to a case of compound fracture, is, of course, to endeavour to reduce the bones. When the upper fragment projects, the skin affords the first impediment to the reduction ; the more you pull, the more you draw in the skin between the bones. There is but one means of overcoming this obstacle. Pass a probe-pointed bistoury beneath the lower lip of the wound in the skin, and divide it ; this will at once liberate the bone, and allow it to slip back, and if perfect coaptation cannot be otherwise procured, a portion of the bone may afterwards be clipped off with a forceps. The bones being properly adjusted, the limb is to be placed on its side or back, according to the situation and the direction of the fracture ; and now comes the question as to the advisability of applying bandages. There is some difference of opinion upon this point. Now, bandaging may be advantageous or injurious, just according to the particular period at which it may be done. If you see the case before swelling takes place, always apply bandages ; they will not only keep down swelling, but will help to maintain the bones *in situ*, and will control the spasms of the muscles, which are so frequent an accompaniment both of simple and compound fractures. If much swelling, however, have taken place, bandaging must not be attempted ; it will surely increase the tumefaction, excite vesication of the skin, cause pain and fever, and if done with any degree of tightness, may lead to gangrene. As to the treatment to be pursued in compound fracture, all you can do is to watch the symptoms as they arise, marking their character, and meeting them accordingly. During the early period of the case, you will have to deal with symptomatic inflammatory fever, which sometimes runs very high ; then the type alters, and in cases attended with much suppuration, hectic fever becomes gradually established. One of the most troublesome symptoms, at this stage, is often diarrhœa, which sometimes proves quite uncontrollable by the most powerful astringents. The chief point, however, to attend to, in the course of compound fracture, is the formation of abscesses. The patient is going on satisfactorily ; his pulse is tranquil, his skin cool ; he sleeps well, neither does he experience any pain—when, suddenly, he is seized with a rigor, high fever is lit up, and he complains of severe pain. This change implies the formation of matter in some part of the limb ; examine it carefully, and if you detect an abscess, open it at once. Sometimes the suppuration presents itself in the form of a succession of small abscesses ; but, occasionally, a large collection of matter forms beneath the fascia, and unless this be let out by an early and free opening, it may burrow until it destroys the cellular tissue between the muscles to a serious extent.

Now, with respect to the performance of amputation in compound fracture, it may be had recourse to at three different periods : within twenty-four hours from the receipt of the injury—primary amputation ;

and after this period, principally for gangrene; and at a still more remote period, for hectic fever—secondary amputation.

As regards primary amputation, we should be very slow in having recourse to it. It is wonderful what powers of repair nature occasionally exhibits, particularly in young persons; so that unless the amount of injury be obviously irreparable, it is our duty to endeavour to preserve the limb. In those cases, however, in which primary amputation is unavoidable, we must take care to hit off one particular moment for its performance—when reaction is fairly established, but before it passes into fever. In cases of severe compound fractures of the limbs, particularly those inflicted by sudden and powerful violence, the individual remains in a state of collapse for several hours afterwards, and if amputation be performed under such circumstances, a fatal result may accrue. You must wait until reaction sets in; still, if you wait until it has glided into fever, you operate under a great disadvantage; your case will be very apt to have an unfavourable issue.

One of the greatest questions, however, in practical surgery, is the period at which amputation should be performed in compound fracture, when gangrene supervenes. For a long time there have existed two parties in the profession which entertain exactly opposite views upon this point. One contends that you should not operate until the gangrene has ceased to spread, and that the line of demarcation has been fairly established. This party is headed by the celebrated Pott, and we find among its ranks besides many eminent surgeons, the late Mr. Colles, than whom there was no higher authority on a point of practice. He thus emphatically expressed himself in his lectures;—"The patient has no chance of surviving amputation when the gangrene is spreading, and the fever high, and before the red line of demarcation has formed." The other party contend that amputation may be performed while the gangrene is spreading. It is headed by the distinguished Larrey, and we find Guthrie, and many other surgeons of repute, following on the same side. It is worthy of remark, however, that hitherto the advocates for amputating in spreading gangrene have been chiefly military surgeons; and I allude to this fact, because it is well known that conclusions drawn from the practice of military surgery are not always applicable to civil. Here, then, are two exactly dissimilar opinions on a point of the highest practical importance; and how are we to reconcile them? While every surgeon must admit the far greater probability of success attending amputation when performed after the gangrene has ceased to spread, there are few, I believe, at the present day, who would refrain from operating merely because the "red line" had not appeared; in many cases, were we to wait for this event, our expectations would never be realised. If, within a certain period, no disposition to an arrest of the gangrene appear, we ought to operate while the patient is strong enough to bear it. Should, however, the gangrene spread quickly,

accompanied by great prostration of strength, delirium, and rapid pulse, the operation is inadmissible. If we are to afford a chance of recovery, in this disease, by amputation, we must be most particular in making a proper selection of the cases in which to operate. We do not operate indiscriminately in cases of diseased knee-joint, nor cancer of the breast ; neither should we do so in spreading gangrene. Students are very apt to think, and even to argue, that in a desperate case, where death is inevitable if the disease should extend beyond a certain limit, it is justifiable to operate. This opinion, however, is most erroneous. We have no right to bring operative surgery into disrepute by having recourse to it, unless there be a fair chance of its being attended with success.—*Dublin Hos. Gaz., April* 1, 1854, *p.* 66.

57.—CASE OF UNUNITED FRACTURE SUCCESSFULLY TREATED BY PEGS.

By Dr. Edward Hutton, Surgeon to the Richmond Hospital, Dublin.

[This case was mismanaged for a long time by a bone-setter.]

On admission to the Richmond Hospital, (Aug. 19th), his arm was almost quite useless to him ; he was unable to raise it from his side, and the motions of the elbow were very limited ; the fractured humerus made an angle salient anteriorly, and retreating posteriorly. On the fore and outer part of the arm there was a quantity of callus thrown out, but there was, nevertheless, between the fragments a considerable amount of motion, which did not produce the sensation of crepitus.

In order to get the fragments into a better position, extension was employed every day for three weeks, for the space of an hour, and while extension was kept up by the pulleys, splints were applied, and bandaged on as firmly as they could be borne.

Nov. 2. The fracture still continuing ununited, and the patient's general health having so much improved as to place him in a favourable condition for the proposed plan of treatment, the following operation was performed:—The arm was forcibly extended, so as to remove deformity as much as possible, two incisions were made down to the bone on the outer and anterior aspect of the arm, just sufficient to admit of the entrance of a drill, by means of which two holes were made, two inches deep, each perforating both fragments, and, of course, the connecting medium between them ; into these holes two ivory pegs, two and a-half inches long, and furnished with flattened heads, were driven ; one of these passed readily through somewhat rarefied osseous structure ; the other, which entered about an inch above and to the inner side, could not be driven farther than to the extent of the hole made by the drill (*i.e.*, two inches), in consequence of the dense texture of this part of the bone at the time of operation ; but a few days later it was easily pushed home, the bony structure having become soft and readily penetrated.

After the operation, water dressing was applied, and the whole limb placed in a cradle splint of open metal work, and kept at perfect rest; on the third day following there was a slight amount of inflammation, the dressings were renewed, and the splints re-applied.

On the seventh day after the operation he began to suffer slight pain at the back of the arm opposite the fracture, and on the ninth day, a small abscess which had been formed was opened; this discharged healthy matter, and soon healed.

At the end of the seventh week the pegs were removed. The upper one remained unaltered, but the end of the lower one was absorbed, having a rough spiculated extremity, resembling the fang of a tooth in process of absorption. There was still slight mobility at the seat of fracture; splints were applied to the upper arm and firmly bandaged, and the whole limb was still kept at rest by means of an angular splint: this was continued for three weeks, when the arm felt quite firm, and the angular splint was removed.

Jan. 12, 1854. The elbow is still a little stiff; there is no perceptible amount of shortening of the limb; on introducing a probe into the openings, the holes from which the pegs were removed seem to be filling up with bone; the swelling around the fracture has much subsided, and the arm is now very useful. He can lift heavy weights, and work with a shovel with strength and ease.

Observations.—In oblique fractures this mode of treatment seems to be particularly appropriate, as the ivory pegs being passed through the fragments bind them together closely, and keep them fixed. Being so inserted they excite vital action not only in the medium of connexion between the fragments, but in the bones themselves, as was manifested by the softening of the indurated osseous texture, owing to the absorption of the earthy particles, and by the absorption of the extremity of the ivory peg in the softer part of the bone.

It can scarcely be doubted, that the new bone which filled the trajet of the bored holes, passed through from fragment to fragment, and thus aided in cementing the union, which took place in an unusually short period, viz., seventy days from the date of insertion of the pegs; there was throughout little or no constitutional disturbance, nor was there any excessive local inflammation.—*Dublin Hospital Gazette, Feb.* 15, 1854, *p.* 20.

58.—*Treatment of Fractured Patella.* By Le Gros Clark, Esq.—[In cases of transverse fracture of the patella, it is sometimes very difficult to secure co-aptation of the fragments. Mr. Clark employed lately a novel expedient.]

It consisted of a cap of gutta percha moulded to the front aspect and sides of the joint, and with a hole cut in its centre large enough to receive the patella. The two halves of the broken bone having been by manipulation brought into apposition, this splint, lightly

padded with lint, was placed over them and confined by means of a bandage. Its influence was thus, by pressure from above and below, to keep the fragments in exact position. The case in which the plan was adopted did remarkably well, and after the first reduction no trouble with subsequent displacements occurred. It is of course advisable to adopt the ordinary measure of flexing the thigh as much as possible on the pelvis during the treatment, and with this view, in the present instance, the leg was swung by a broad suspensory bandage passed beneath the calf, and fixed to the curtain-pole of the bedstead. The cap was not applied until the tumefaction following the receipt of the injury had subsided. The above accident occurred to a female. A similar case of transverse fracture of the patella in a man, is now under the same treatment in the Hospital, under Mr. Le Gros Clark, and promises an equally favourable result. The application of this simple apparatus has not been attended by any inconvenience in either case.—*Med. Times and Gazette, July* 1, 1854, *p.* 12.

59.—*Recipe for making Felt Splints.*—These splints were formerly sold at our instrument-makers. We were in the habit of using them with satisfaction, but latterly have not been able to procure them. Professor Frank H. Hamilton remarks—we think justly—that they are, in some respects, superior to gutta percha, and he gives ('Buffalo Med. Journal,' Dec. 1853) the following recipe for making them:—"Dissolve three pounds of gum shellac in two quarts of alcohol. It should be dissolved in a tin vessel, furnished with a tight cover, to prevent evaporation. Spread a piece of old or new woollen cloth on a board, and, with a clean brush, saturate both sides of the cloth with the solution. Hang it up until it is thoroughly dried. Lay it again upon the board, and apply a second coat of the solution to one side only of the cloth. Dry again, and apply a third coat to the same side. There will be now three successive layers upon one side, and one on the opposite. While the last coat is yet fresh, fold the cloth so that the side having three coats shall be applied to itself. Now, with a hot flat-iron, smooth and press the surfaces together. When it is cold, a slight rubbing with sand-paper makes it fit for use. It becomes a flat, almost unyielding board; but exposure to a moderate heat will make it pliant, so that it can easily and accurately be adapted to any surface."—*American Jour.—Med. Times & Gazette, June* 17, 1854, *p.* 638.

ORGANS OF CIRCULATION.

60.—CASE OF TRAUMATIC CAROTID ANEURISM.

By W. R. Beaumont, Esq., late Professor of Surgery, Toronto.

[About eight weeks before admission into the Toronto General Hospital, this patient had been stabbed in the neck. This wound seems

to have penetrated the carotid artery, and was followed by excessive hemorrhage.]

On examination, a very prominent tumour was found on the left side of the neck, seated close to the clavicle, and extending transversely from the inner to the outer border of the sternocleido-mastoideus, having made its way through the cut fibres of the muscle. The tumour was distinctly circumscribed, somewhat conical in form, and circular at its base, which was about two inches in diameter. On the summit of the tumour was a stretched and thin cicatrix, about one inch and a quarter long by half-an-inch broad. The direction of the long diameter of the cicatrix was oblique, and rather nearer to a horizontal than to a vertical line. We do not know the weapon with which the wound was made, nor do we know whether its point was directed horizontally, as in making a thrust, and so piercing the artery on the same horizontal plane as that on which the cicatrix is placed; or whether the weapon had been held as a knife or dagger usually is held in the act of stabbing, and its point directed downwards. In the latter case, the artery would be pierced considerably below the level of the cicatrix. The tumour pulsated strongly. To the touch, it gave a distinct vibratory sensation or thrill, and to the ear a loud *bruit de soufflet*. By compression, the sac could be emptied; and by firm pressure on the carotid distal of the tumour, the sac became much more tense and resisting to the touch, and, I believe, somewhat larger, which latter circumstances I consider the best evidence of the tumour being aneurismal, and of the aneurism being carotid. His pulse was 84, and moderate as to force and fulness; his appetite good. I ordered ten minims of tincture of digitalis three times a day, spoon diet, and perfect quietude.

On the ninth of January, a week after admission, the tumour and his pulse remained the same. He was now bled to ten ounces, (the blood containing three ounces and a half of serum, and six ounces and a half of coagulum). His diet was restricted to a pound of bread and a pint of milk per diem, and the digitalis was continued as before. On this day I made a cast of the tumour, in order to ascertain with accuracy any increase or diminution in its size.

On January the 15th, thirteen days after admission, and six after bleeding, the tumour appeared smaller, pulsated less strongly, and its vibratory feel was less marked. Pulsation had occasionally been observed in the external jugular vein, which I conceive may have been caused either by a communication between the currents of blood in the common carotid and in the internal jugular, or by the aneurismal tumour striking at each pulsation the external jugular, with which vein the tumour was nearly in contact. The pulse had been 72 for the last three or four days, and the patient felt rather weaker than on admission.

[The treatment usually called Valsalva's continued to be pursued,

and nine weeks after the first bleeding, and eighteen weeks after the wound, the tumour was no longer visible, although the bruit was as loud as ever, sounding like the roar of the sea.]—*Lancet, July* 29, 1854, *p.* 75.

61.—*Treatment of Aneurism by Peroxide of Iron.*—Dr. Pavesi, of Bergamo, has lately injected a strong solution of the above-named salt into an aneurism of the temporal artery affecting a young man. The sac was about one inch from above downwards, eight lines transversely, and might contain a drachm of fluid. A puncture was made into the tumour, and bright arterial blood escaped; the glass-pipe of one of Charrière's syringes was then introduced, and about sixteen drops of the solution thrown in. The tumour was ten minutes afterwards quite solid, and in one month no trace of the aneurismal tumour was left.—*Lancet, Aug.* 5, 1854, *p.* 104.

62.—*Is Traumatic Phlebitis a Contagious Disease?*—[In a conversation at St. Bartholomew's Hospital, this question was brought up by Dr. Simpson, of Edinburgh. It arose from the fact of the great frequency of phlebitis after operations.]

Dr. Simpson stated his conviction that phlebitis is essentially in the same category as puerperal fever, some forms of erysipelas, &c., and that it is capable of being conveyed from patient to patient by the surgeon, just as the accoucheur is well known to convey the latter diseases. He believed that the operator's hands, or even the knives used, might thus be made the means of transmitting the morbid poison. In support of the opinion, an instance was adduced in which a surgeon had, on account of the extreme prevalence of phlebitis among his patients, been obliged to desist for a time from operative practice.—*Med. Times and Gaz., Aug.* 5, 1854, *p.* 137.

ORGANS OF RESPIRATION.

63.—ŒDEMA OF THE GLOTTIS FROM A SCALD OF THE PHARYNX.

By Jolliffe Tufnell, Esq., Surgeon to the City of Dublin Hospital.

[This patient attempted to swallow a very hot potato, which stuck in his throat:]

He felt his condition becoming critical, and finding that he could not remove it by his fingers, (introduced from the mouth), he grasped the throat with such force as not only dislodged the potato upwards, but broke it into two, and he shot the pieces out upon the floor. Conceiving, from the sensation continuing, that a piece still

remained in the throat, he came up to have it removed. From his general appearance it was evident that nothing was now there ; but to assure him, he was given bread to swallow, and, lastly, had a probang passed. Still, however, he was not quite satisfied, but went away, and continued at his labour throughout the day, returning home at five, p.m. During the afternoon, he felt a "huskiness" in his throat, and some uneasiness about the top of the windpipe. He did not take much notice of it, however, until sitting down to his tea, at six o'clock, when, on attempting to swallow, spasm set in, and he nearly fell from off his chair ; he recovered from the immediate suffocation, but felt great distress in breathing, and as if he was being choked ; his brother, who was with him, became also greatly alarmed, and they ran to the hospital as quickly as they could.

On arriving there, his situation was urgent, the dyspnœa from spasm, œdema, and the act of running, combined, being extreme. Having been sent for, I arrived in a short time, but his condition was already much changed ; the alarm had subsided, and his heart's action became much reduced, the breathing being regular, and (though somewhat obstructed) not such as to demand immediate interference. After removing all anxiety by assurance, I proceeded to examine the throat, and found the epiglottis erect, and the tumefaction extending all round. With a view to reducing the œdema and give vent to the serum effused, I passed down a guarded bistoury and scarified the epiglottis fully, which afforded relief. He was then placed in a well-warmed ward, his feet immersed in a bucket of hot water, and he was desired to inhale steam freely.

Up to nine o'clock he continued doing well, when, on attempting to swallow, spasm again set in, and dyspnœa suddenly returned. He now grew rapidly worse, the countenance became anxious, and exhibited distress. The pulse too, became, intermittent, and there was no respiration audible beneath the clavicles.

Under these circumstances, I deemed it advisable to operate at once, and obtaining the sanction and approval of my colleague, Dr. Williams, performed laryngotomy by a vertical incision, inserting a full-sized trachea-tube through the crico-thyroid space. The operation presented nothing peculiar. It was performed by placing the patient on his back, and with rather a free incision *completely* exposing the crico-thyroid membrane, by dissection, before opening into it with the knife. This thorough division of the structure, and cleaning of the membrane, was done at Dr. Williams' suggestion, as he stated that he had often seen the branch of the thyroid, the inferior laryngeal artery, which penetrates this space, of such considerable size as, if wounded, to render it necessary that it should be tied, and in this instance his opinion proved correct, for on being divided it bled *very freely until secured.* The vertical opening into the crico-thyroid membrane was rendered sufficient for the introduction of the trachea-tube, by divaricating the edges of the incision by means of an aneurismal needle,

inserted on either side. Speedy relief followed the operation; the respiration, previously inaudible with the stethoscope in either lung, was immediately free and forced, and the patient, in a few minutes, jumped from off the table and walked over to his bed.

[The after treatment was directed to prevent bronchitis, and on January 16th the canula was withdrawn: on January 20th, the wound had healed, and the patient was discharged.]

This case, then, goes to establish the fact so strongly dwelt on by Mr. Prescott Hewitt, viz., that when we have to operate for the relief of dyspnœa arising from acute affections of the larynx in the adult, it is sufficient to make the opening in the crico-thyroid space.

Mr. Hewitt draws attention to the great practical fact of the wide difference which exists in the condition of the parts in acute affections of the larynx, terminating in effusion, in the adult and in the child; "the effusion in the adult taking place by far most frequently in the submucous tissue, whilst in the child it is usually poured out on the free surface of the mucous membrane. In the adult, then, the effusion is purely laryngeal; in the child it is not only laryngeal, but also tracheal."

This effusion in the submucous tissue of the larynx, we know to be almost invariably limited to the parts above the rima glottidis, and the explanation of this limitation, Mr. Hewitt says, "can easily be found in the anatomical structure of the larynx and trachea, by observing that above the inferior vocal cords the mucous membrane is connected to the subjacent parts by means of a loose cellular tissue, which is very abundant (especially in the region of the aryteno-epiglottic ligaments), whereas the connexions of the mucous membrane lining these cords and the trachea are very firm, the cellular tissue here being very short and very dense, forming so firm a bond of union, that it is difficult to separate the mucous membrane from the parts lying underneath it."

With effusion thus limited to the rima glottidis and parts around it, if dyspnœa should occur, what reason is there for resorting to tracheotomy, when laryngotomy will suffice? The delay, which is now so fatal in these cases, will not be permitted, and precious time will not be wasted in the administration of useless medicines, if experience proves that the comparatively simple operation of laryngotomy, *early performed*, will give relief. The proverb says, delay is dangerous; and it certainly is so here.—*Dublin Hosp. Gazette, Feb.* 15, 1854, *p.* 17.

64.—*Impromptu Tracheotomy.*—It occurs occasionally to the medical practitioner to be called on, unprepared and unfurnished with the proper instruments, to perform the operation of tracheotomy. It may not, therefore, be amiss to state what may be done on such an emergency. A pair of pointed scissors exists in every case of instruments,

and in every house. With these, the integuments over the trachea may be divided, and, the points being brought together, the trachea pierced; the points being then duly separated, a horizontal, longitudinal opening is made. If the case be extremely urgent, the handle of a teaspoon may now be inserted, and turned one quarter round; the opening is then patent, and the patient, if previously struggling for breath, is relieved, perhaps saved.

To render the tracheal orifice permanently patent, a portion of all the tissues surrounding and composing the orifice may be included in a loop of cotton, at four opposite points, and the cotton may be drawn tight, and fastened to a *ring* of wire, tin, whalebone, cane, or even card. If all these are absent, the pieces of cotton may be readily tightened by the operator and an assistant.

In this manner, life may be saved in the case of choking, and in other cases of laryngismus.—*Lancet, Aug.* 26, 1854, *p.* 172.

65.—FOREIGN BODY IN THE TRACHEA OF A CHILD.

Under the care of John Hilton, Esq., F.R.S.

Mr. Liston remarks in the fourth edition of his 'Practical Surgery,' as follows:—"Only one case, is, I believe, on record, in which a foreign body was actually discovered in, and removed from the bronchus during life." Since that time, several cases of great interest have been recorded, and, indeed, in the chapter from which the above sentence is quoted, Mr. Liston himself gives the narrative of two others. The instances in which the operation has been performed are still, however, very few, and all additions to our experience in respect to it are very valuable. Before proceeding to the details of the following case, which has just been successfully operated upon by Mr. Hilton, we will take a short glance at the results of a few other cases in which the same procedure was adopted. In the case operated upon by Mr. Liston himself, a large portion of mutton-bone was extracted, six months subsequent to its being swallowed, from the trachea of a middle-aged woman. Before the operation, she had repeatedly suffered from attacks of bronchitis; after it "all the symptoms ceased, and the patient was soon restored to perfect health." A second case was the well-known one of the celebrated engineer Mr. Brunel. The foreign body consisted of a half-sovereign, which had been accidently allowed to slip into the windpipe. After repeated trials of the inverted posture and other means, without any success, tracheotomy was performed by Sir B. Brodie. The attempts to seize the coin, however, failed, both on the occasion of the operation, and on a second trial five days afterwards. Sixteen days after the operation, and before the wound had healed, the inversion of the body was again practised, and fortunately was successful. In a third case, in which Mr. Dickin was the operator, a bell-button was removed by tracheotomy from the right bronchus of a boy, aged 8, six days after the accident. After a rather

sharp bronchitis, the patient recovered perfectly. A fourth case occurred under the care of Mr. Birkett, in Guy's Hospital, nearly two years ago, and may be found recorded in the 'Medical Times and Gazette' for Sept. 10, 1853, p. 268. The patient was an infant aged 1 year and a-half, and the offending body was a portion of a walnut, which had passed into the larynx. The bit of nut had become impacted in the larynx, and had never passed lower; and in this respect the case differed from the preceding, and from the one which is to follow. Mr. Birkett opened the trachea, and endeavoured to dislodge the foreign body by pushing it upwards; his attempts, however, failed at that time, but another trial made two days afterwards was successful. The infant recovered and the wound closed. Mr. Liston mentions a very instructive case, in which the inverting of the body, and at the same time subjecting it to smart shaking was successful in dislodging a small bullet which had slipped into the trachea. It may be concluded, then, that in all cases in which the size of the body swallowed is not so large as to preclude the probability of its expulsion, the first measure tried should be the shaking of the patient's body with the head in a depending position. If, after repeated trials, this plan fail, the trachea should be opened, (not by a mere slit, but a valve-like aperture of considerable size,) and extraction attempted. Should the attempt at extraction fail, it may be well to try again inversion of the body, the wound in the trachea being kept freely patent meanwhile. The inversion plan, previous to tracheotomy, fails sometimes, on account of the suffocative dyspnœa caused whenever the foreign body falls into the glottis; but when a false opening has been made, this inconvenience is quite remedied.

[Is it justifiable to remove a foreign body from the trachea when no urgent symptoms exist,—the general opinion is in the affirmative. In this case, in a little girl 8 years old, a small glass-bead passed into the trachea on May 3rd.]

It was found that the expansion of the two sides of the chest was never equal, and that respiration was always much less distinct in one than in the other lung. The deficiency, which was almost complete, would affect one side for a time, and then after a coughing effort would change to the other. The side from which the sound was for a time wanting did not fill during inspiration, and its intercostal spaces, instead of bulging became much depressed. It was judged probable from these signs, that there was some loose body lying about the bifurcation of the trachea, which alternately plugged its divisions.

Operation, 2 p.m.—The child having been placed under the influence of chloroform, and the head thrown back, Mr. Hilton made a longitudinal incision through the soft parts over the trachea, by which several large tortuous veins were of necessity divided. The bleeding, which resulted from the division of these, was arrested by means of cold, but the edges of the divided isthmus of the thyroid gland required

to be touched with lunar caustic. The bleeding having ceased, the next step consisted in seizing the right side of the trachea, by means of a tenaculum, with which Mr. Cock, who was assisting, held the tube forwards, and over to the right side. Mr. Hilton now introduced a second tenaculum into the left side of the trachea, and with a bistoury divided four or five of the rings of the latter in such a manner as to allow of a valve-like flap to be lifted upwards. The opening being thus kept widely patent, a short time was allowed to elapse, in the hope that the foreign body might be floated up. These expectations were not disappointed, for after a few rather violent attempts at coughing, a large mass of mucus, in which the bead was enveloped, floated out into the wound, and was safely removed. The breathing became quiet immediately after the expulsion of the offending body. The flap of the trachea was carefully replaced, but no attempt was made to close the external wound, which was simply covered with a fold of wet lint; a saline antimonial draught was ordered to be given three times daily.

[On the 29th May she was discharged cured. Mr. Hilton draws attention to the following points:]

1. The importance in such cases of forming a correct and exact diagnosis previous to undertaking an operation. In the present one, the history of the accident, and the symptoms which had followed it, pointed conclusively to the presence of a foreign body in the trachea. The size and shape of the body supposed to have been inspired had been pretty clearly ascertained by getting the patient, with the assistance of her father, to draw it on paper. That it was moveable, and had not become impacted in either bronchus, was shown by the attacks of dyspnœa, during which it had probably passed upwards into the glottis, and also by the alternation from lung to lung of the loss of respiratory sounds. (See above.) 2. The necessity for speedy resort to operation in such cases, without delaying, in the hope of the spontaneous expulsion of the offending body. The inexpediency of losing time by waiting was grounded on the knowledge that the aperture of the glottis is always much larger during inspiration than during expiration, so that there is no good reason for expecting, that because a body has found its way through the aperture inwards, it will also be able to do the same outwards. 3. The importance of making a large opening into the trachea. The size of the opening must, of course, be in proportion to that of the body to be removed, which it should always much exceed. The size, shape, and smoothness of the foreign body in the present case would, in all probability, have made it extremely difficult to extract it had not the opening been sufficiently large to permit of its easy escape. To have used forceps would have involved the risk of breaking it, while from its polished exterior and rounded form, it would not have been easily seized.—*Med. Times and Gazette, Aug.* 5, 1854, *p.* 136.

ALIMENTARY CANAL.

66.—ON MALIGNANT STRICTURE OF THE ŒSOPHAGUS.

By Dr. Risdon Bennett.

[The following case is chiefly valuable on account of the diagnosis of this disease. Before the use of the microscope this case would probably have been classed among simple fibrous strictures.]

James Sessions, a wine-cooper, of intemperate habits, aged 51, was admitted on January 16. He complained of having for some months been losing flesh and strength, and stated, that two years ago he had spit up a little blood. He had no cough or difficulty of breathing. On auscultation, a little harshness was noticed to attend the respiratory sounds over the left apex, but there were no marked signs of disease He looked ill, was pale and thin, and his eye had the peculiar clear appearance which so often denotes pulmonary phthisis. The cod-liver oil was accordingly ordered, and a stomachic mixture, to be taken together three times daily.

On February 2, he mentioned casually another symptom, namely, that for two months past he had not been able to swallow solids. On further questioning, it appeared that he had long felt a sense of obstruction in the upper part of the throat, though quite unattended by pain or by smarting in the act of swallowing. He had been losing his voice. No tumour could be felt externally. His breath was fetid, and there was a continual flow of saliva into the mouth, by which the teeth had become coated. As a concentrated form of nutriment, the cod-liver oil was still continued.

From this date he got rapidly worse. The loss of voice became more complete. He spoke in a very peculiar manner, always holding the head motionless when doing so, and enunciating very deliberately; the sound produced was a low, soft whisper, quite unattended by hoarseness or any laryngeal twang. Several possible causes were suggested, and the exact diagnosis of the disease was not easy. The fetor of the breath was quite enough to indicate the possible existence of a pharyngeal abscess connected with diseased bone. There might be an aneurism pressing on the œsophagus, or the source of obstruction might be a stricture of that canal. The last supposition was deemed the most probable. On March 16, Mr. Hilton, as Surgeon to the Hospital for Diseases of the Chest, saw the patient, in consultation with Dr. Bennett, and the question was raised as to the propriety of attempting mechanical dilatation. Having examined the case carefully, Mr. Hilton took the diagnosis a step further, and also expressed himself as decidedly averse to instrumental interference. He believed that the disease was stricture by a malignant growth, this opinion being founded on the circumstance that the voice was lost. Had it been an aneurism pressing on the trachea or nerve trunks supplying the larynx,

the voice should have been stridulous, and paroxysmal attacks of suffocative dyspnœa should have occurred. Were it an abscess, there could be no reason why the voice should be permanently lost. Were it a simple contraction or stricture of the œsophagus, the voice, again, would not suffer ; but were it supposed to be malignant growth around the latter tube, it would in all probability, without stretching them, involve in its growth the recurrent laryngeal nerves, and produce exactly the condition present (paralytic aphonia). It must be remembered, that this opinion was given although there was no thickening whatever perceptible on external examination. The impropriety of attempting to force a malignant stricture was, of course, apparent ; and Mr. Hilton advised, that, on the contrary, the man should not even try to swallow solids, but content himself with taking large quantities of bland fluid nutriment. Blisters were also to be applied around the throat, in the hope of diminishing the vascularity and tumefaction of the growth.

[The patient was transferred to St. Thomas's Hospital, where he died.]

The *post-mortem* examination was made by Dr. Bristowe, from whose notes we condense the following account :—A tract of the œsophagus, about two inches long, and extending downwards from about an inch and a half below the commencement of the tube, was involved in stricture. The mucous membrane of this part was destroyed, and the internal surface was rugged, slightly nodulated, of a dusky, livid colour, and covered with a dirty secretion. Excepting at the commencement of the diseased tract, the calibre of the tube did not appear to have been lessened, as a considerable amount of hollowing out seemed to have been effected by ulceration. On section, the muscular layer of the œsophagus might be distinctly seen, having on each side of it a band of greyish-white deposit, a line or two in thickness. The tissues were firmly incorporated by this deposit, but in no part were there any large masses of new growth. The diseased tract of the œsophagus adhered to the trachea, but neither the latter nor the larynx were in any way diseased. External to the trachea, on its posterior surface, there were numerous small whitish nodules, about the size of pins' heads. In the submucous tissue of the anterior wall of the œsophagus was a narrow band of deposit, which extended from the lower edge of the ulceration, about two inches down. It was nodulated, and very firm. The mucous membrane, which adhered to it, but was not ulcerated, was raised by it into a ridge of about the eighth of an inch in depth. Dr. Bristowe made careful examination with the microscope of the juice scraped from many parts of the cut surface of the diseased tract. Among many epithelial scales, constituents of the broken down tissue and of inflammatory deposit, there was observed a sufficient number of well-characterised laminated or encapsuled cells, to make it certain that the disease was epithelial cancer. No secondary deposits were found, but some of the neigh-

bouring lymphatic glands were slightly enlarged. With the exception of the lungs, there was nothing worthy of note observed in any of the other viscera. The apex of the left lung was indurated and presented puckered patches, as if from the cicatrization of old disease; no remains of tubercle could, however, be found, nor were there any cavities. In the apex of the right lung, there were also some local indurations, and, in addition, a few small cavities, each about capable of holding a horse-bean. These cavities were free from secretion, and were lined by a smooth false membrane. There was no deposit either in their walls or in other parts of the lung. No cretaceous matters could be found in any part of the pulmonary tissue. The œsophagus and trachea were removed, to form a preparation; but a few days afterwards, Dr. Bristowe made a dissection of the parts, in order to determine the relations which the recurrent laryngeal nerves had sustained to the diseased growth. The left nerve was found atrophied, and, indeed, quite lost in the cancerous mass, but the ends of the right one had been cut away so closely that they could not be found, from the relative position of parts there could be little doubt, however, that its trunk was likewise destroyed. Dr. Bristowe examined microscopically the fibres of the muscles of the larynx supplied by these nerves, and found them universally in so advanced a stage of granular degeneration, that scarcely any trace of transverse striation was visible. In proof that this change was not *post-mortem*, some portions of neighbouring muscles were examined also, and in these the normal structure was found still to exist in great perfection.

The above case offers some very interesting points for consideration.

1st. *The Symptoms of Œsophageal Stricture.*—Under this head we would ask attention to one which has not been more than casually alluded to by authors, although exactly what might be, *à priori*, expected. We refer to the difficulty in swallowing the saliva. In this case it was a very prominent one; the man always appeared as if under mercurial influence, the fluid running over the corners of his mouth, the teeth coated and in a loathsome condition. With respect to the diagnosis of the exact nature of the stricture we have already said enough in the narrative of the case.

2nd. *Character of Aphonia from Paralysis.*—A better example of simple and complete paralysis of the laryngeal muscles could perhaps scarcely be found. There was no disease whatever of the larynx itself, but, by destruction of the recurrent trunks, all supply of nervous influence to its muscles had been cut off. The symptoms, as we have seen, exactly correspond with what should be anticipated from this condition; there was simple loss of the laryngeal element in the voice. The nerve-trunks had not been stretched or irritated, but gradually involved and destroyed; there had been, consequently, no attacks of spasm or of stridor.

3rd. *The Conjunction of Cancer with Retrograde Phthisis.*—An indisputable example of the coincidence of active tubercular disease

with cancer in the same stage is probably yet wanting. Many have, however, been observed like the present, in which, in patients dead of cancer, the remains of old tubercular disease have been found. It is interesting to note how complete the arrest had been, not a single trace of tubercle being discovered, although the cicatrices and small excavations proved that it had been there. The previous history of the case showed, that at the period when probably the phthisis was active, the man scarcely knew himself to be in ill health, although, on one occasion, he had spit a little blood. A patient recently left one of Dr. Bennett's wards, in St. Thomas's, who had evidences of a considerable cavity in one lung, and was believed also to suffer from cancer of the uterus. Whether the pulmonary mischief might not also be cancerous, is, of course, open to question, and is, perhaps, the most probable supposition. At page 319 of the 'Medical Times and Gazette,' for March 26, 1853, a very instructive case may be found, in which, during life, a woman was believed, by many competent observers, to suffer from a conjunction of active phthisis with scirrhus of the breast. The *post-mortem* appearances, to the naked eye, were also deceptive, but the microscope proved that what had been mistaken for tubercle in the lung was in reality cancerous deposit.—*Medical Times and Gazette, June* 10, 1854, *p.* 595.

67.—*Anodyne Cement for rendering Teeth insensible to Pain.*—Mr. J. Paterson Clark, of London, with the object of rendering diseased teeth insensible to pain, previous to the operation of stopping them permanently with metal, or filing away the carious parts, recommends the application of a paste, composed of Canada balsam and slaked lime, which is to be inserted into the hollow tooth like a pill. Mr. Clarke states, that this preparation affords immediate relief in all but chronic cases of inflammation. He says:—"If fresh pills be inserted as often as the old ones wear out, or are removed on the return of pain, in order, like an abscess, to allow the escape of matter or blood, and this practice be continued, the teeth will become as insensible to touch as the soundest, and may then be permanently stopped, and otherwise treated in the usual way, without the infliction of pain."—*Dublin Hos. Gaz., June* 1, 1854, *p.* 141.

68.—*Emetics in Toothache.*—M. Cæsar Fredericq, of Ghent, has directed attention to a variety of toothache which is indicative of a disordered state of the stomach, and which he has succeeded in relieving by the administration of ipecacuanha in emetic doses. He has seen this treatment succeed where everything else had failed, and where even the removal of the diseased tooth produced no effect.—*Lancet, July* 15, 1854, *p.* 34.

69.—ON STRANGULATED HERNIA.

By Prescott Hewett, Esq., Assistant Surgeon to St. George's Hospital.

[It is too true that the desire to reduce cases of strangulated hernia has too often induced the surgeon to prolong his attempts till too late to benefit his patient by an operation.]

Amid the various improvements so strongly urged in the present day for the treatment of strangulated hernia, none, I feel confident, would be greater than that of resorting to an earlier operation. Every case of this nature must be necessarily judged of by itself; but it would be well were a general rule laid down, that, after a fair trial of the taxis, with all necessary appliances, the operation should at once be resorted to; and especially should this rule be applied to cases of femoral hernia, which, among our operations, are by far the most common. Were such a plan once adopted generally, the statistics of operations for strangulated hernia at our different hospitals would, without doubt, be very much more satisfactory than they are at present.

An operation having been decided upon, the next question of importance is,—Whether the sac is to be opened or not? To this subject great attention has of late been devoted, and admirable are the essays which have been written upon it. At some of the metropolitan hospitals the present rule is, *cæteris paribus*, not to open the sac. Such is the rule at the London Hospital, and most satisfactory are the results in those cases where this plan was carried out; but, taking the aggregate number of operations and the deaths in Mr. Nathaniel Ward's memoir, the results on the whole, although very favourable, are certainly not more so than they are at St. George's Hospital, where the practice, as to this point, differs widely from that of the London Hospital. At St. George's the rule is, to open the sac freely. The numbers in the present analysis from the cases at St. George's are 78 operations, in 75 of which the sac was freely opened, and in the whole of these operations there were 19 deaths. The numbers from the London Hospital, given in Mr. Ward's memoir, are 69 operations, and 21 deaths, the sac not having been opened in a little less than one-half of the sixty-nine cases. I have no wish to make the returns from St. George's appear better than they really are; but still it is right, I think, to mention that in the nineteen cases of death, the fatal result may fairly be attributed to other causes, not necessarily connected with the operation, in at any rate six of them.

The following were the *post-mortem* appearances observed in these six cases:—1. Granular kidneys and pneumonia, peritonitis, intestine dark coloured, with patches of slate colour, and very soft. 2. A young woman who had been confined shortly before the operation, the uterus was large and soft, with some remnants of sloughy placenta at the fundus, peritonitis, intestine slightly discoloured. 3. Died comatose a few hours after the operation; disease of the brain, peritonitis, in-

testine slightly discoloured. 4. Acute bronchitis, which existed before the operation, every symptom connected with the hernia being favourable. 5. Just recovering from a severe attack of erysipelas; well marked symptoms of peritonitis previous to the operation. 6. Lived forty-one days after the operation, and appeared to sink ultimately from exhaustion, brought on by extensive sloughing connected with large bed sores.

The number of operations and of deaths from the two hospitals, although small, prove, at any rate, I think, that the fatal result usually observed in these cases does not depend, as has been said, so much upon the opening of the sac, as upon other causes which have not been duly considered. There is no doubt that if cases of this nature were seen at a much earlier period than they commonly are at our hospitals, and if protracted efforts at reduction were more generally given up, there is no doubt, I say, that then the rule of not opening the sac would find many more advocates.

The last point I shall touch upon, is that of purgatives after the operation. Not many years ago, it was very generally the practice, immediately after an operation of this nature, to give at once some aperient medicine; and that which I then saw most frequently used, was Epsom salts and infusion of roses, every three or four hours, until the bowels acted, a dose of calomel having sometimes been previously given. I must say, however, from all I have seen, that I cannot help thinking that repeated doses of salts are much more likely to do harm than good; in fact, so decided is my opinion, on this point, that I have, of late years, never prescribed this purgative in such cases. As far as my own experience is concerned, I am decidedly of opinion, that generally it is very much better not to be anxious as to the early action of the bowels, and to give as little medicine as possible. Repeatedly, of late years, I have seen in the wards of St. George's Hospital, cases of strangulated hernia in which the bowels were not open for four or five days after the operation. These cases were left to themselves; the bowels acted of their own accord, and the patients did well. Far from soliciting the action of the bowels at an early period, I have seen large doses of opium given in many instances immediately after the operation, and that with decided benefit. Should it become necessary to administer a purgative, castor oil, with or without a mercurial, according to circumstances, is, I think, on the whole, the best remedy.

The wise plan, however, in these as in all other cases, is for the surgeon not to act on any particular plan, but to treat each and every case of strangulated hernia in all its phases, according to its own particular symptoms.—*Med. Times and Gaz., Sept.* 23, 1854, *p.* 315.

70.—*Mr. Luke's Strangulation Test for Hernia.* If the body of the hernial tumour be compressed by the hand, an impulse is communicated to all its parts below the seat of stricture; but, if the neck of

the hernia be grasped between the finger and thumb of the other hand, above the stricture, while such compression is made, there will not be any impulse felt. When, in the commencement of the examination, the neck of the tumour is first grasped, we may be always assured, that if an impulse is felt on compression of the tumour itself, the seat of stricture is nearer the abdomen; and, by gradually drawing the finger and thumb in that direction, while renewed compression of the tumour is made, a point will soon be reached at which impulse ceases to be felt. The point at which impulse first ceases to be felt is the seat of stricture. In like manner, if an impulse is not felt when the neck of the tumour is first grasped, we may be equally assured that the stricture is situated nearer to the body of the hernia; and, by a like gradual approximation to it with the finger and thumb, an impulse shortly commences to be felt. The point where the impulse commences to be felt is the uppermost part of the strangulated contents, which implies that the stricture is immediately above it; and, on inquiry, it will be found to correspond with the indications of an examination commenced from below." The value of acting on the indications of this simple proceeding when its application is practicable is at once apparent, as unnecessary division of the soft parts is thus avoided.—*Med. Times and Gazette, July* 29, 1854, *p.* 106.

71.—*Opium as an Adjuvant in the Reduction of Hernia.* By Richard Hey, Esq., York.—[Mr. Hey thinks highly of opium in these cases, but differs from some previous writers as to the mode of using it. He says:]

It is of the last importance that a prompt and decided effect should be produced. You must, as it were, take the system by surprise. In cases especially where the hernia is small and the stricture very tight, adhesions form quickly, particularly if roughly handled; or the bowel becomes œdematous and the reduction by the taxis is all but impossible. It is surprising what tolerance of opium the system seems to acquire in these cases, and I think its efficacy in "relaxing fibre" is much enhanced by its combination with emetic tartar, without, as far as my experience goes, increasing the tendency to vomit. As I wish to trespass as little as possible on your valuable space, I will conclude with a brief record of a couple of cases, by way of illustration. One occurred in an old man of seventy; the other in a person about fifty years younger.

Case 1. J. B., aged about 70, an old mail-coachman, was admitted into the York County Hospital under my care. He had very large scrotal hernia, which was strangulated. The scrotum was very greatly distended and painful, particularly when handled. He had been once before relieved from the same condition at the hospital, by means of large depletion, &c., leaving him in a very weak state. As any attempt

at reduction by taxis gave him great pain, and I wished to save his strength, I at once prescribed the following in a pill:—Morphiæ muriatis; antimon. potass.-tartrat., aa gr. i. M.—To be taken immediately; and a quarter of a grain of each every fifteen minutes for four doses. He was then put into a warm bath, and in ten minutes the hernia was reduced. This man was very slightly narcotised; and on the following day he was quite well.

Case 2. R. L., about 22 years of age, was under the care of Mr. Edward Allen, with small inguinal hernia, which had been strangulated several hours. He had vomiting, &c. The taxis had been tried, and also repeated with the accompaniment of chloroform, but without success. I saw him in consultation about 10 p.m. I again put him under the full influence of chloroform, and gave the taxis again a fair trial, but with no better success.

As it was now late, and the vomiting had in some degree subsided, I recommended the following medicine to be given, failing which, I proposed to operate at eight in the morning.—℞. Morphiæ muriatis; antimon. potass. tartrat. aa gr. ii; conf. rosæ q. s. M. Fiant pilulæ iv, capiat i omni quaque semihora. The four pills were taken as directed; and in the morning when the patient was first visited, the gut was found to have spontaneously retired. The young man did not suffer any inconvenience whatever from the medicine.—*Association Med. Journal, July* 7, 1854, *p.* 608.

72.—*On Laceration of the External Abdominal Ring in the Reduction of Hernia.*—A new method of reducing inguinal hernia has been invented by M. Seutin, of Brussels. He proposes that the external abdominal ring should be enlarged by being lacerated under the skin by the index finger. At first sight, it may appear by no means easy to lacerate at pleasure the external pillar of the ring with the index finger, acting through the thickness of the inverted integuments. Secondly, it may be asked how could the finger be introduced between the border of the pillar and the knuckle of the intestine, when the latter was distended and constricted at its superior part? And, lastly, it cannot be forgotten, that according to the generally accepted doctrine, the external ring is by no means the most frequent agent of strangulation in inguinal hernia, but rather the neck of the sac, or the superior orifice of the canal (internal abdominal ring).

Excellent, however, in theory as these several objections may be, it is impossible to abstain from noticing the particular circumstances which have been collected respecting the practice in question, in addition to the published accounts, and confident declarations of its efficacy put forward by its discoverer.

It has been established beyond a doubt, by experiment on the dead subject, that the external abdominal ring may be easily enlarged with-

out any operation, that is to say, without section of the skin, by means of simple traction by the finger.

Nor does the possibility of reducing strangulated hernia immediately after the rupture of the ring appear any longer doubtful. In ten cases in which the taxis had failed, M. Seutin ruptured the external pillar of the ring, and immediately the reduction of the protruding intestine was effected. We are unable to say whether the laceration is prolonged through the length of the canal. Certain, however, it is, that the resistance offered by the hernia did not prevent the insinuation of the extremity of the index finger into the canal, and the laceration effected was sufficient to render reduction of the intestine possible. In face of these incontestable facts, it is impossible to pass over the method in silence, although at present it may be premature to express any opinion in its favour. Evidently it cannot be applicable to all degrees and all periods of hernia, for it would expose an intestine highly inflamed, or on the brink of gangrene, to the risk of rupture; but, nevertheless, it may have its circle of application, and surgeons will do well perhaps not to condemn it prematurely.—*Gaz. Hebdom.—Med. Times and Gazette, Sept.* 2, 1854, *p.* 246.

73.—*On the propriety of Opening the Bowels soon after Operation for Hernia.* By Joseph S. Gamgee, Esq.—[After a long and interesting paper on this subject, Mr. Gamgee comes to the following conclusions in cases where the operation of herniotomy is not followed by spontaneous action of the bowels.]

1. When the condition of the gut is good, and there is little or no peritonitis, an oleaginous enema should be given an hour or two after the operation, and repeated after three or four hours in case of failure, or a purgative exhibited by the mouth.

2. When the peritoneal inflammation is intense, even though the bowels be in fair condition, antiphlogistics must be perseveringly employed; and though a simple enema may be given in the first six hours, it is advisable to excite the action of the bowels until the next day, either by more active enemata, or purgatives by the mouth.

3. In the case of mortification threatening the gut, the bowels should be kept quiet by opium, and purgatives and enemata abstained from until the danger of perforation has passed.

These rules promise to be faithful guides for practice, inasmuch as they are in conformity with sound doctrine, and so far as I am aware, opposed by no facts; but the great rule is, to observe rigorously the symptoms of each particular case, to study its indications and aid nature with the lights which doctrine and practice reflect, and not to pretend to act according to systematic rules based upon speculations, in cases which present infinite varieties, according to the age and constitution of the patient; the duration, size, and position of the hernia; the degree and duration of the strangulation; the condition of the

intestine; the presence or absence of inflammation; and other more or less important conditions. In truth, just as there is reason for dissenting from those who systematically oppose purgatives after herniotomy, there is reason for not placing implicit faith in the teaching of those who universally recommend them. If there be any class of cases in medicine and surgery—and there are many—in which systems are injurious, and in which each case requires to be studied of itself with the light of reason and experience, that class is preeminently the one which comprises cases of strangulated hernia.—*Asso. Journal, June* 30, 1854, *p.* 576.

74.—ON FISTULA IN ANO.

By John Hamilton, Esq., Surgeon to Richmond Hospital, Dublin.

[Mr. Hamilton relates a case of fistula in ano, on which he makes some remarks of a general nature that are truly practical and good. The symptoms of the patient, W. Fry, aged 38, were nearly of the usual character.]

A probe can be passed through the fistula into the rectum; its point is felt a little above the internal sphincter. The external opening is about one-third of an inch from the extremity of the rectum.

He is otherwise healthy, and has a healthy aspect; but he has been a hard drinker. The only cause he can assign for the present complaint is, a very costive state of the bowels.

He was ordered a little grey powder at night and a castor oil draught in the morning, The bowels were well moved.

Feb. 19th.—Mr. Hamilton passed a slightly curved director through the fistulous opening, and brought its point out through the anus. By a sharp bistoury, passed along the director, the parts between the two openings, including the sphincter, were divided; a piece of dry lint was placed between the lips of the incision.

The bowels were afterwards kept gently open by mild laxatives, and the wound was dressed from the bottom with dry lint.

March 1st.—It is now the twelfth day since the operation; the wound is so nearly well that he is discharged.

If an abscess by the side of the anus is left to itself, after more or less suffering, it breaks, discharges its contents, and the patient experiences much relief. But the abscess generally will not close; the repeated action of the sphincter, in passing fæces and wind, prevents it by breaking up the adhesions between its sides as fast as they are formed, and it becomes a *fistula in ano*, that is, a small narrow passage communicating with a suppurating cavity at the side of the gut. Perhaps even a more powerful cause is, the extent of the cavity compared to the small opening, giving such imperfect exit to its contents, and constantly keeping it more or less distended.

This is the simplest form of blind fistula. The ease of the patient is not long; the fistula, which at first discharged freely, gradually ceases to do so; then pain is felt, with a return of swelling and general disturbance; this is again relieved by the abscess bursting through the old fistula, or making a new opening. In short, the matter being secreted faster than the small fistula can give exit to it, accumulates, and seeking some other outlet, burrows in the loose cellular tissue under the skin at the side of the anus, sometimes backwards towards the coccyx, sometimes forwards to the perineum and scrotum, and sometimes outwards to the buttock, and downwards to the thigh; you will, in fact, in old cases, be surprised at the number and extent of these fistulæ, and their distance from the anus. When there is only one fistula, and in rather an early stage, you will perceive but little redness or fulness at the side of the anus, but at one spot a little raised, red papilla; this is the opening of the fistula, and is sometimes so small as to be with difficulty discovered, and scarcely to admit the aid of the probe. In old cases you will see many of these with a puckered appearance of the surface, in some parts red, in others whitish and glossy, with induration or callosity. In these old and extensive fistulæ, when you introduce a probe into one of the leading sinuses you will be almost alarmed at the depth it goes up along the side of the rectum, the walls of which are bared, so that when you pass your finger through the anus you can readily feel the probe through the thinned wall of the bowel, which is sometimes nearly isolated all round; the very loose structure of the cellular tissue here leading to this.

Now, if the abscess, instead of breaking externally, does so internally, the opening will in general be found only a short distance within the anus, just above the internal sphincter; and the patient, after the breaking of the abscess, will be relieved for a time from the disagreeable sensations he previously felt, but not for so long a period as in the former case; wind, the secretions of the rectum, or some liquid, or small portions of solid fæcal matter get through the opening into the cavity of the abscess, and keep up pain, irritation, and suppuration. There is in this case more irritation of the rectum, and the patient has more frequent calls to stool, and not perfect relief after a motion, which will be observed to contain pus, and often blood. These are troublesome cases, and when the abscess is small, often obscure.

A medical friend of mine consulted me for uneasiness and weight about the anus; this uneasiness almost amounting to pain when he passed a motion; and he had observed a slight moisture. He was out of health, irritable, and low-spirited. There was no redness, but at the right side of the anus there was deep-seated hardness, which was very tender, causing him to wince on pressure. When the gorget speculum was introduced, a small papilla was seen just within the anus, at the same side, from which matter oozed; through this the

point of a hooked probe could be passed and felt under the skin externally.

In either of the forms now described, if the disease is left to itself, it rarely ever gets well; but, on the contrary, as I have already said, fresh abscesses form, the matter burrows in every direction, and opens in different places, leaving fresh fistulæ, for many of the openings do not close. If in the beginning you have a blind external fistula opening by the side of the anus, the sinus or cavity of the abscess, sooner or later, after running up the side of the rectum, opens into it, and thus you have a "complete *fistula in ano*." So when you already have a blind internal fistula, with an opening just above the internal sphincter, it is usually not long before this works its way out by the side of the anus, and you have a complete fistula formed. This is known by not only matter, but air, coming through the fistula, when the patient passes fæces or wind; fæcal matter, however, rarely comes through, and even in the most complete and direct fistula the patient is often quite unconscious of the passage of wind. It is not always easy, by examination, to satisfy yourself whether the fistula is complete. You pass your probe into the fistula up by the side of the rectum, and generally much above the internal fistula; you can feel the probe through the isolated wall of the rectum, but you can detect no opening; try just above the internal sphincter, about an inch from the anus, and you will probably at length hit off the opening, and the probe will pass into the bowel. As the discovery of the opening renders the operation more easy and more effectual, we should not hastily abandon our efforts to find it. M. Ribes has, perhaps, studied this subject with the greatest care. He examined seventy-five bodies, and found the internal orifice to be "most commonly a little above the place where the union is effected between the membrane lining the rectum and the external skin, sometimes also a little higher up; but the opening is never situated above five or six lines high," at least in any one of the seventy-five dead subjects in which he found the fistula. He says, that "the opening itself appeared as if ragged or torn; in the greater number it was soft, but hard and callous in a few."

The precise course run by the fistulæ was a little variable; in many cases he had seen them, after having taken their origin in the interior of the rectum, descend between its mucous membrane and the internal sphincter muscle. When they have arrived at the inferior part of this muscle, they take a detour and pass between the external sphincter and the skin, and proceed to form an opening in the neighbourhood of the margin of the anus. In many other cases the fistula passed through the fibres of the internal sphincter muscle, descended immediately between it and the longitudinal fleshy fibres of the rectum, bore down on the superior face of the external sphincter, passed through its fibres, and then proceeded to ulcerate its way through the skin, at a greater or less distance from the inferior extremity of the rectum. But in a

sufficiently large number of the subjects the parts through which the fistulæ made their way were so much disorganized and confounded together, that it became impossible to determine their precise course. In all these subjects, the course of the fistula was lined by a membrane, extremely thin, smooth, and uniform in its texture, and seemingly destitute of any villosity. He adds an opinion, in which my experience will not allow me to coincide. "The result of these researches has convinced me, that in nearly all cases the fistula is affected in a pile, and sometimes that its passage is determined by some vein of the hemorrhoidal plexus."

In making an examination, therefore, for the internal orifice, we might almost detect it with our eyes, by separating the sides of the anus sufficiently, but if not, while exploring with a probe we should not go too high. It should also be borne in mind, that from the looseness of the textures by the side of the rectum, a little force will drive the point of the probe readily on, and while following a false route we might think we were still in the fistulæ. You will find, too, that you will often have to curve the probe considerably, the straight probe not following so readily the tortuous course of the fistula. Cases present themselves where the external opening is at some distance from the anus, the fistulæ burrowing horizontally under the skin towards the rectum. Slitting up this fistulous passage materially assists in hitting off the internal opening, which we had previously failed in finding ; the probe being thus allowed a greater freedom of movement.

In the treatment of fistula you will first have to consider whether the patient has any serious internal disease, because in the latter stages of phthisis abscess by the side of the anus ending in fistula is not uncommon. Now the existence of the fistula may be of use as a derivative in delaying the fatal progress of the disease, and, therefore, no good surgeon would think of operating, unless when the pain and annoyance are unusually great.

In other diseases of the lungs, heart, liver, or womb, or when there is caries of the sacrum, we must refrain from cutting the patient. In the last case, till the carious bone takes on a healthy action, or where there is a piece of loose dead bone, till it is removed, operative proceedings are useless. Where none of these contra-indications exist, the disease being a purely local affection, we resort to the operation, which is generally the only means of cure ; it will vary according to the kind of fistula we have to deal with.

When the fistula is simple and complete, the internal opening is readily found, and not a great distance of parts between this and the external opening, the operation is very easy. Pass a director through the fistula into the rectum, and where the internal aperture is near the anus, it can be passed out through it, by gently curving the director ; along the director a probe-pointed bistoury, which divides the parts between the two openings, including the sphincters. A piece of lint introduced to the bottom of the wound soon stops the

bleeding; it should not be removed till forty-eight hours. The wound may afterwards be dressed with lint, and when granulating be touched with a solution of the nitrate of silver, a drachm to the ounce of distilled water; and, if indolent, the lint may be wet with a lotion of the sulphate of zinc, a grain to the ounce of water, with the addition of a little spirit of wine. It usually takes three weeks or a month to heal completely. During this time the bowels should be kept open by the daily use of the sulphur and cream of tartar electuary, with an occasional mild aperient, infusion of senna with epsom salts and manna, the compound infusion of roses with the same, or castor oil.

I have already alluded to the case where, though the internal opening is near the anus, yet that a cavity exists much higher up, denuding the walls of the rectum. I believe it is not necessary to alter the operation on this account; the case is slower in getting well after the operation, but subsequent to the division of the parts below the internal opening, the walls of the cavity above become altered, healthy granulations cover their surfaces, which coalesce, contract, and the cavity becomes obliterated. It is very important to be decided on this point, because the division of the rectum high up is so dangerous, the vessels, both veins and arteries, being large, and the bleeding from them is consequently copious and hard to stop. Larrey, Sabatier, Ribes, Brodie, and Syme, are agreed in this opinion.

The operation is much more serious where a large thickness of parts exists between the two openings. You must expect smart bleeding, the veins at the lower end of the rectum are naturally large, and from the long-continued diseased action the arteries become so too. When the finger is introduced into the rectum, the diseased side feels quite hot, and a large artery can often be perceived pulsating strongly there. Should this come across the edge of the knife, and be divided, it will of course bleed furiously, and, as the part is solid and condensed by inflammation, the bleeding vessel does not retract, nor can it usually be drawn out by the tenaculum and ligatured. No one should despise this danger of hemorrhage.

In blind internal fistula it is best to make it a complete fistula, by making an opening at the side of the anus, in the hard tender red part, which, in such cases, usually points out the seat of the abscess communicating with the internal opening, and then operate as for complete fistula. When the fistula has been very small, and any indications of its existence at the side of the anus not well marked, and the internal opening close to the anus, I have passed a probe, curved like a hook, through the opening, till its point could be felt through the skin, so that I could readily cut down in it, and, afterwards, rapidly completed the remaining steps of the operation.

In blind external fistula the operation is simple enough. A probe bistoury, with the front of the end a little sharp and projecting, is passed up the fistula till its point presses against the wall of the rectum, the nail of the fore-finger in the rectum scratches against the

end of the bistoury till it pierces the bowel, and then is drawn downwards, with the finger on its end, dividing the sphincter and all the parts below it.

When there is double fistula, it is best to operate on one side first, and a week or ten days after on the other; in this way incontinence of fæces is avoided, which, though temporary, is a very distressing aud disgusting affection. Where several fistulæ lead into one, after the division of the main fistula, the others should be laid open into it. This is most essential; many of the cases which come to the hospital, when operations have been already ineffectually performed, owe their want of success to its having been neglected.—*Dublin Hosp. Gazette, April* 1, 1854, *p.* 68.

75.—*Diagnosis of Fistula in Ano by means of Iodine.*—M. Limauge mentions, in the 'Archives Belges de Med. Milit.' that in order to find out whether the fistula in ano of a patient of his had an internal opening, he injected pure tincture of iodine into the fistulous tract, at the external opening, whilst his finger was in the rectum. In withdrawing the former, he saw upon it the usual stain of iodine, and he could judge, by the portion of finger stained, how high the opening was situated. This means of diagnosis is certainly of some value when the ordinary modes of investigation fail to clear up the case, and it is preferable to allowing fluid to regurgitate from the anus by the same kind of injection, as the internal fistulous opening may be so small as not to let any fluid pass through it.—*Lancet, Aug.* 12, 1854, *p.* 122.

76.—ON THE TREATMENT OF HEMORRHOIDAL TUMOURS BY CAUTERIZATION.

By Dr. Alphonse Amussat, Jun.

[Whenever hemorrhoids are of long standing, voluminous, ulcerated, accompanied by prolapse of the mucous membrane, or with hemorrhage, Dr- Amussat does not hesitate to remove one or more, according to circumstances, by means of cauterization.]

Since the month of April, 1844, the date of the first employment of the cauterization of the base of hemorrhoidal tumours with grooved forceps charged with Filhos' caustic, the idea of which originated with me, we had perceived that this new mode of operation enabled us to obtain the cure of hemorrhoids, and that the hemorrhage, ulcerations, &c., disappeared together with the tumours; but it remained to be shown whether, in cases in which these affections should be complicated with tolerably extensive prolapse of the rectal mucous membrane, cauterization by the same plan would remedy the principal affection and its complication. Experience has not been tardy in justifying the hope we had entertained in this respect. It is, moreover,

easy to account for this result, which we verified in all our operations of this kind, in reading the description of our proceeding. The cases of the patients in whom this complication was sufficiently advanced, and the drawings taken from nature, which I have appended to them, will, I trust, enable practitioners to understand it.

When we are about to examine a patient whom we suppose to be affected with internal hemorrhoids, we cause him to place himself on a vessel, and to make efforts at defecation; the tumours then come down, and we easily demonstrate their presence; often they even permanently appear externally, or show themselves on the exercise of the least effort. But as it is necessary to judge precisely of the extent of the prolapse of the mucous membrane of the rectum, we advise the patient to take a lavement, and to pass it again in our presence some moments after, using efforts, and continuing the latter when he gets up. With the assistance of this mode of investigation, we arrive at an exact appreciation of the extent of the affection, and the operator is enabled to judge beforehand at what height he ought to place the *porte-caustique* forceps, in order to cure at once the hemorrhoidal affection, and the rectal prolapse which complicates it.

The introduction of the index finger into the rectum is a means of diagnosis on which we must not place too much reliance, for I have known several patients who, examined in this manner by the most distinguished practitioners, had been declared not to have hemorrhoids, and in whom I, nevertheless, found even voluminous ones. The surgeon accustomed to this mode of examination, indeed, experiences internally a peculiar sensation of softness in certain points, proves the existence of inequalities rather than of tumours disappearing under the finger, and gives pain to the patient when the tumours are ulcerated; but in general these signs are not sufficient to enable him to affirm whether a hemorrhoidal affection exists or not. The rectal *toucher* is especially useful in ascertaining whether any particular complication, such as a stricture, polypus, or cancer, coexists.

At the same time we examine the number of tumours which ought to be cauterized, as, for the following reasons, we never destroy them all:—In order not to suppress suddenly and completely a state to which the system has long been accustomed, and not to expose the patient to a disturbance which might not be free from inconvenience; besides, experience has shown that when we have destroyed the more voluminous tumour when there are two, or the most voluminous ones when there are more, those which remain diminish and give much less inconvenience. The cauterization of the largest hemorrhoid, when well performed, often prevents the others coming out, and the ulcerations, if such exist, being no longer subjected to a continual friction against one another, cicatrize, and the patients enjoy as good health as if they had been completely freed from them. Consequently, a different mode of proceeding would be at least useless, and might sometimes be dangerous. If, contrary to what usually occurs, the

patient should subsequently suffer, recourse might be had to the operation, which would not then be more severe than before, and would remedy an inconvenience which we sometimes meet with, but which much more frequently does not present itself.

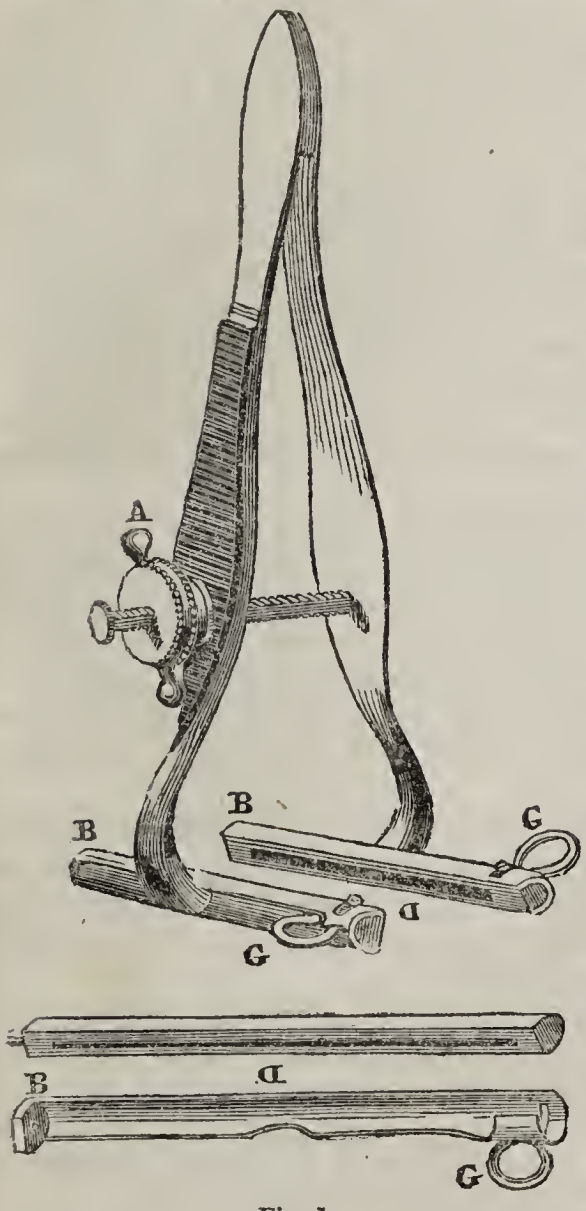


Fig. 1.

In ordinary cases I employ my forceps in the form of a compass with protecting blades,—more convenient when it is necessary to carry the cauterization to an elevated point of the rectum,—but in the case of which I am now speaking, I prefer the T-forceps of my father, or those which I have had made on the same plan, with very slight modifications. In fact, when there are voluminous hemorrhoids, with more or less extensive prolapse of the mucous membrane, the tumours expanding largely externally, it is very easy to cauterize their base.

Since the month of June, 1844, the period of the construction of my first grooved forceps for the cauterization of internal hemorrhoids, we have subjected both the instruments and the operative manipulation to numerous modifications, which have made the operation so simple that a perusal of the description of it will render its application easy; and already distinguished surgeons, among whom I would mention MM. Maher, J. Roux, and Laurencin, Professors in the Schools of the Imperial Marine, MM. H. Larrey, Barthélemy, Martin Saint-Ange, Thirion (of Namur), Mascarel, &c., have employed this proceeding with success, using instruments made on the model of ours, or having the greatest analogy to them.

The T-shaped porte-caustique forceps of my father, a drawing of which is given above, was made on the model of a little forceps he used for rupturing the internal membranes of arteries, in order to facilitate torsion. The forceps is drawn one-third less than its actual magnitude; the groove and blade, separately represented, are of the

full size. This instrument is composed of two legs, united at one of their extremities by a spring; at the other they are furnished with two grooved semicircles of steel, D, perpendicular in their direction, and so arranged as to oppose one another when the forceps is closed, or when it embraces the base of the tumour which it is wished to cauterize. Two small sliding plates, B, having a movement of rotation around the grooves, which are cylindrical, have at one of their extremities a small handle, C, intended to be used for moving them, and consequently to cover or uncover the caustic when it is thought advisable to do so. A screw, A, is used for tightening the legs of the instrument. The two sliding plates, to which I have given the name of protectors, have partly replaced the preserving forceps which we originally used for completely isolating the tumours from the surrounding parts previously to cauterizing them. When the protectors are placed in front of the grooves, the caustic being entirely covered, we may seize the tumours, let them go again, take hold of them, or slide the grooved semicircles to a greater or less height without the patient experiencing the slightest painful sensation.

To fill the grooves of the instrument, I employ Filhos' caustic in paste, or solid. The caustic paste is made by throwing a sufficient quantity of pulverized Filhos' caustic into a saucer, adding some drops of alcohol or eau de Cologne, and triturating the mixture with a spatula. When the paste has the consistence of ordinary honey it is placed in the grooves, and covered with the protectors. To fill them with solid caustic, the latter is poured into them while in a state of fusion.

Internal hemorrhoids are often complicated with corresponding external hemorrhoids, or rather with swellings forming two rows of superposed tumours. Experience has proved that it is not necessary to destroy the external swellings—they die away when the internal hemorrhoids have been destroyed by caustic.

The operation having been decided on, I generally prepare the patient for several days previously with depuratives, baths, and mild regimen, even venesection, if it should appear necessary; and the evening before the operation I prescribe a purgative of cold-drawn castor oil, in order to unload the bowels, and to prevent the occurrence of alvine evacuations for two or three days at the least.

The articles necessary for the operation are: one or two porte-caustique forceps; pulverised Filhos' caustic; alcohol or eau de Cologne; a sheet folded square; a piece of oilcloth; a syphon for continuous irrigation; a syringe, or a clyso-pump; two large vessels, one to contain cold water intended for the irrigation to be carried on during the operation; the other to receive the fluid when it shall have passed over the anus.

Before the operation the bed on which it is to be performed should be arranged. The folded sheet is placed across it, and is covered with an oilcloth reaching to the vessel placed under the edge of the bed, to

receive the water projected during the operation; and in order that the latter may flow off easily, the two inferior angles of the oilcloth should be pinned together, so as to form a channel to carry the water directly into the vessel intended to receive it.

The patient, having taken a lavement during these preparations, passes it again, at the moment of operation, into a vessel left near the bed, and then lies down, still keeping up the efforts at expulsion, which are indispensably necessary to allow the surgeon to place the forceps properly.

The position of the patient which I prefer is the same as that for the operation for fistula in ano. Doubtless, if the patient were on his knees, or placed as for the operation of lithotomy, he would be better circumstanced for keeping up the efforts; but notwithstanding the advantage the operator might have by employing one or other of these positions, I have renounced them on account of the fatigue the patients experience—a degree of fatigue which once seemed to me to have occasioned syncope.

I am not in the habit of submitting my patients to the action of anæsthetic agents unless they earnestly request it; knowing by experience that the operation is not sufficiently painful to render their employment necessary, for under the influence of the very strong compression used, and of the douches of cold water, the pain is easily borne. During the operation the patient feels a pinching which, in a great measure masks the pain of cauterization, and consequently only complains of the latter at the moment of withdrawal of the instrument. This smarting, besides, is diminished rapidly enough by the means I employ immediately after the operation. Two assistants placed at the sides are engaged in holding back the neighbouring parts; a third is occupied in directing a continued stream of cold water on the anal region. Strictly speaking, one assistant, and that even a non-medical person, might be sufficient, as he would only have to work the piston of the instrument, for the operator could direct the current of liquid with the left hand, while he held the forceps in the right, but it is much more convenient to be assisted by several persons.

The patient having been placed on the bed in the manner described, and continuing the efforts at defecation made in passing the lavement, the assistants carefully keep back the surrounding parts. The operator, holding in his right hand the porte-caustique forceps with its troughs covered, so as to be able to touch the tissues without causing the least painful sensation, seizes the tumour gently, without compressing it, and desires the patient to make efforts, if possible, still more energetic, in order to allow him to pass the instrument to the height he judges advisable. This period of the operation, very important in all cases, is especially so in this. When the forceps is well placed, he tightens the screw sufficiently to prevent the tumour escaping, but so as to be able, with ease, to turn the grooved pieces or the protectors. When the caustic is in contact with the tissues, the instrument is tightened

as much as possible, but gradually, in order to bring the compression to its maximum. By acting thus, the duration of the operation is shortened, and the pain is diminished, the patient most frequently complaining only of the pressure. The douche of cold water is imme-

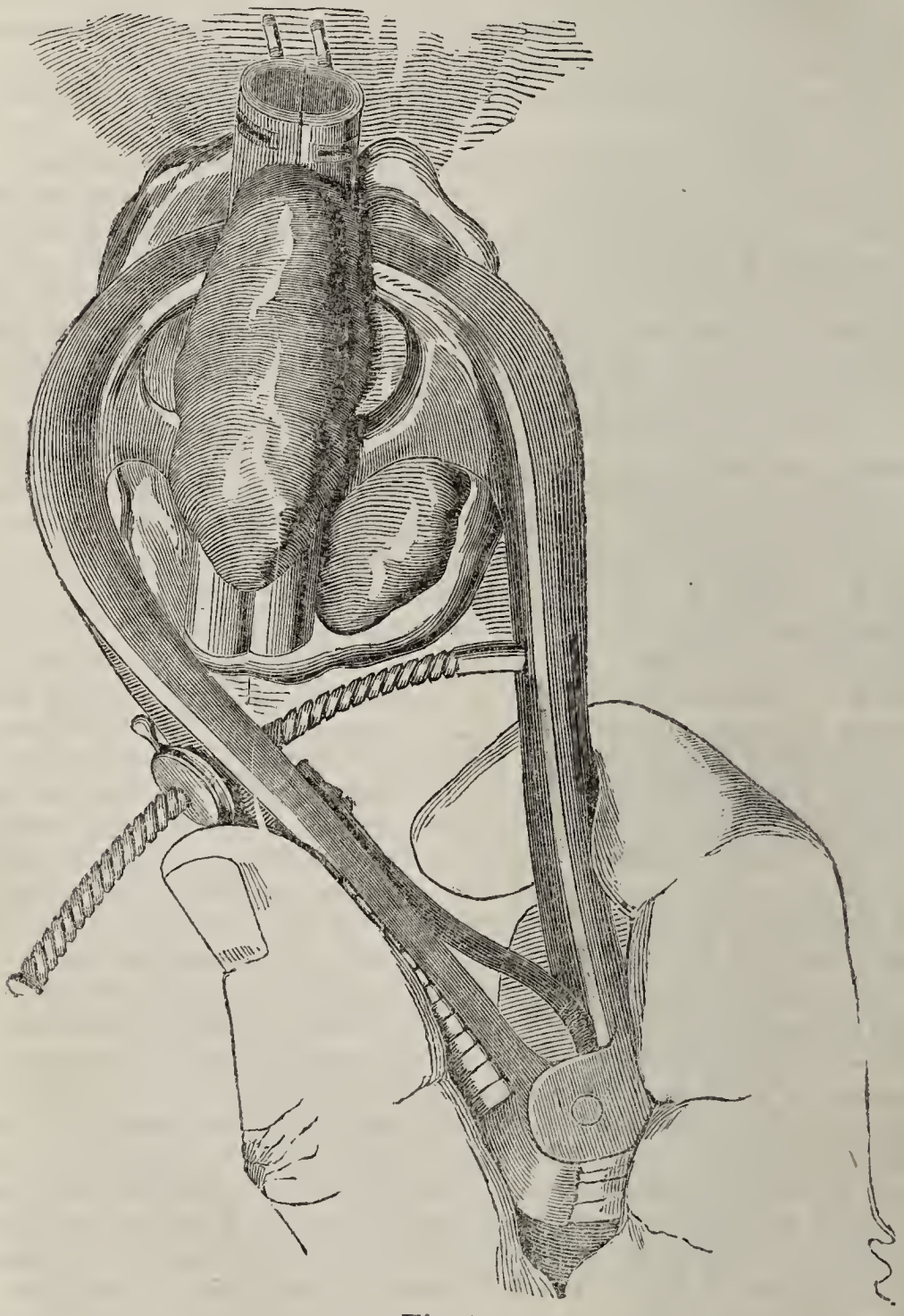


Fig. 2.

This figure represents a voluminous tumour caught with my forceps and vice, with the caustic acting.

diately commenced, and continued while the operation lasts, which varies from two to four minutes. With strong forceps and fused caustic two minutes are longer than is necessary for cauterization. The time, however, as may be supposed, varies according to the bulk of the tumours to be destroyed.

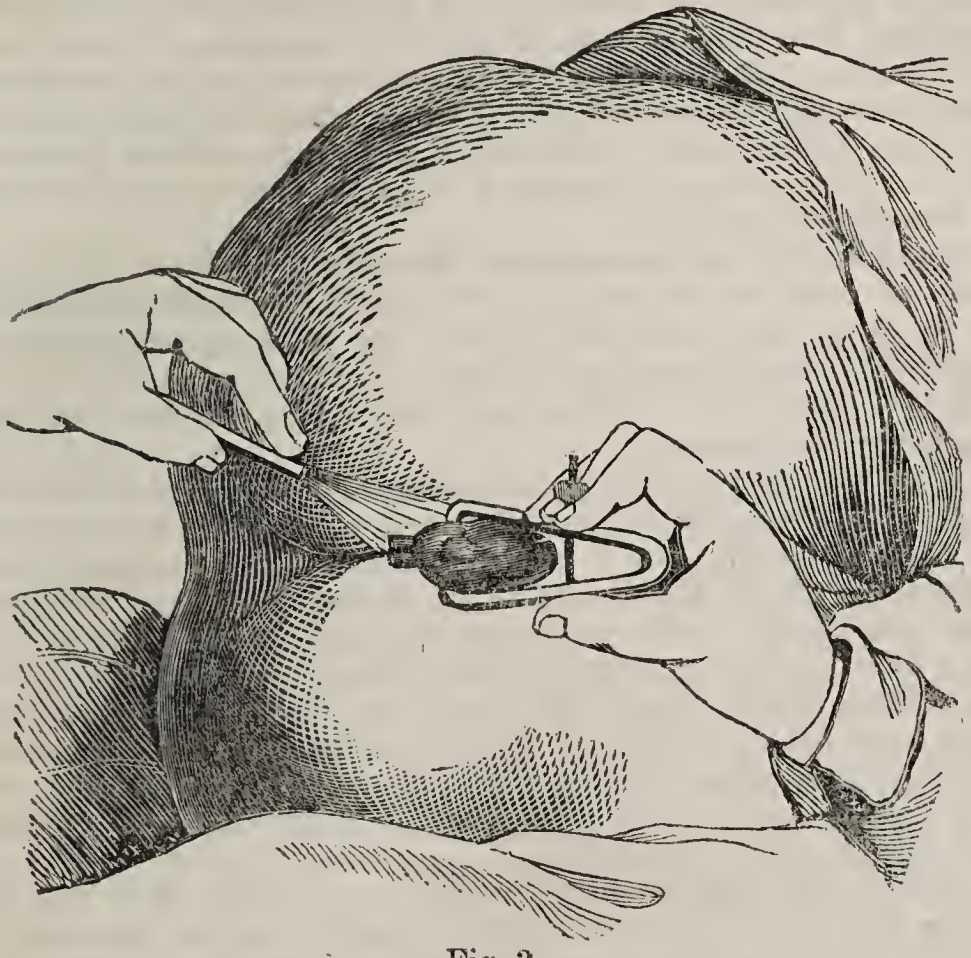


Fig. 3.

This figure represents the operator holding with his right hand the forceps placed upon the tumour, and directing the jet of cold water with his left.

The instrument is then gradually loosened and withdrawn, care being taken to re-cover the grooves to prevent the caustic touching the neighbouring tissues. The assistants should keep the parts separated, and the patient should be again desired to make efforts at expulsion, that the cauterized tissues, on which a little caustic the action of which is not yet over still remains, may not cauterize those which should be protected.

The operation being over, the douches of cold water both on the anus and internally should be continued so as to neutralize the last portions of caustic which may not have acted. I have often, with advantage, applied olive oil or vinegar and water to the cauterized parts.

Should a porte-caustique forceps not be at hand, the operation might be performed as follows:—The patient having been placed in

the position I have described, and the same preparations having been made, the tumour it is wished to destroy should be seized, as high as possible, with an ordinary dressing or dissecting forceps, and cauterized directly, by placing in the centre a stick of Filhos' caustic cut into a conical shape, to which a rotatory motion should be given to make it penetrate the hemorrhoid, so as to destroy it centrally and laterally. It would be necessary, during the operation, to protect the surrounding parts with spatulas or paper-knives, and afterwards to wash the cauterized tumour with slightly acidulated water, so as to neutralize all the caustic which might not have combined with the tissues. The subsequent treatment should be precisely the same as in the ordinary proceeding.

Immediately after the operation the patient is placed in a large bath, and when the tumours have been bathed for some moments, they are returned. He remains in the bath for an hour, and sometimes longer, and always experiences great relief from it; for it is then he feels the action of the caustic, which had, during the operation, been masked by the pressure.

On coming out of the bath, cataplasms of linseed meal enclosed in muslin bags are applied to the anal region, or irrigations of tepid water are directed to the part if smarting is still felt. The pain which patients experience after the operation is very variable; I have seen some who felt very acute smarting for twenty-four hours; but with the majority the painful sensation is, after some hours, but slight, if the precautions already mentioned have been observed. Some of my patients do not go to bed even the day of the operation; in general they remain sitting or lying on a sofa—for walking causes pain—and they are unable to go out for some days; elderly patients generally keep their room for a fortnight.

After the operation I allow but little nourishment, and that of a nature admitting of easy assimilation, in order to avoid action of the bowels, which always occasions acute pain. When the patients feel a desire to go to stool, I advise them to inject into the rectum two ounces of lard melted in a water-bath; it is useful in facilitating the passage of the fæcal matters, and in diminishing the smarting caused by the motion. A tepid sitz-bath should be taken immediately after the stool. Sometimes I give, during the treatment, a gentle purgative, in order to remove constipation when the eschar is not yet detached; while it is, on the other hand, advisable that the patient should not go to stool at the time when the cauterized tumour is separating, in order to avoid the flow of blood which might then take place. An examination of the parts enables us to get a glimpse of the cauterized hemorrhoid, and to ascertain whether elimination proceeds more or less quickly; experience, however, has shown that, in general, the older and weaker the patients are, the more slowly this process goes on. The falling off of the eschars requires a very variable time, generally from five to eight days; I have seen some become de-

tached at the end of seventy-two hours, while in other patients they were still adherent fourteen days after the operation. To render the consequences of the operation as favourable as I have described, the patient ought to take every day several sitz-baths at a moderate temperature, rather cool than warm, to keep cataplasms or water-dressing constantly on the anal region, and to use a very light diet. When the swelling has disappeared the same treatment should be continued for some days, but the nourishment may be gradually increased; we may then, with advantage, form our opinion of the result of the operation, and decide whether it is necessary to cauterize other hemorrhoids.

[M. Jobert, who formerly preferred the actual cautery, now prefers the caustic potash with lime.]

M. Jobert de Lamballe has recently published a new mode of cauterizing hemorrhoidal tumours *en masse* by means of caustic potash with lime. This surgeon seizes the tumours with a double arch of silver, which forms a sort of capsule, and covers them with Vienna paste, which he leaves applied for some minutes. The only patient on whom this operation has been performed had hemorrhoids of ordinary size, and two successive applications of the paste were necessary to destroy them. This mode of operation cannot be compared with the circular cauterization of the base of the hemorrhoids I have described. By my proceeding, in fact, the caustic is applied on a surface of but very limited extent, and the pressure of the forceps, combined with the continual irrigation with cold water, so moderates the pain of the operation that it is only exceptionally I have recourse to anæsthetic agents. Moreover, the pain which follows the operation is much less than in M. Jobert's proceeding, the cauterized surface being less extensive. His plan can only be compared with the mode I formerly pursued with a stick of Filhos' caustic. The latter proceeding possesses the advantage of not requiring a special instrument, and besides, the solid caustic acting more quickly than the paste, the operation lasts a shorter time, and I have never been obliged to repeat the application.

[Dr. Amussat finishes this interesting paper by describing some of the sequelæ of his operation.]

The two or three minutes which I judge necessary for the cauterization having elapsed, the forceps is removed, care being taken that the caustic it contains shall not touch the neighbouring parts, and the injection of cold water, which has not been interrupted during the operation, is continued. The jets of liquid should be directed chiefly to the linear depressions formed by the instrument, in which the caustic is situated, in order to remove particles which may not have chemically combined with the tissues. It is at this time especially that the patient feels the cauterization, which is no longer masked by

the pressure of the forceps, and the cold fluid pouring on the tissues has, in addition to the effect just mentioned, that of acting as a local anæsthetic. When the parts have been washed sufficiently to have removed all the caustic, the tumours are carefully smeared with olive oil, and returned into the rectum. The oil both serves to facilitate the reduction, and, to a certain degree, protects the tissues by combining chemically with the alkalies, should any still remain.

Small quantities of cold water are also thrown into the rectum, and allay the pain, and afterwards the patient is placed in a cold sitz-bath, or, better, in a full-sized bath at an agreeable temperature, which will, of course, vary according to the time of year. In this he generally remains about an hour, being guided in this respect by his own sensations.

Generally speaking, on coming out of the bath, the pain which has gradually diminished, is very slight; occasionally, however, in very nervous persons, or when the caustic has not been completely removed from the tissues, it is still severe. In this case we advise the patients to return to bed, and to place themselves in a position similar to that they observed during the operation, while a continued douche of water, which in winter should be tepid, in summer cold, is directed against the anal region. I have known some to find it more convenient to substitute for the douche, continued applications of lint dipped in cold, sometimes even iced water, and very frequently renewed. This latter means, though undoubtedly efficacious, should be employed with care, so as to avoid the reaction which is apt to set in when it is suspended or left off. Other patients remain all day in the sitz-bath, the temperature being kept up by the addition, from time to time, of warm water. I once attended, with my father and Dr. Pouget, a person who, after the cauterization of two tumours, remained in a sitz-bath almost constantly for a week; he said he was very well in it, and not the slightest bad effect resulted from this protracted use of it.

Most frequently two or three sitz-baths during the day, small continued douches, with poultices on the anal region in the intervals, constitute the local treatment.

This plan should be persevered in until the wound is almost completely cicatrized, especially if the least sign of inflammation should be observed.

The only nourishment I allow is strong beef tea, and I recommend the patient to keep his bed for two reasons; first, because by so doing, he bears the restricted diet better; and secondly, because the bowels are then less liable to act. Those who will not submit to this plan are obliged at once to take a more substantial diet, the result of which is stools, which are more painful in proportion as they occur nearer the time of the separation of the eschar.

Frequently a dysuria comes on which lasts some hours, and subsides spontaneously, for I do not remember having had recourse to catheterism in a single instance. There is generally swelling, sometimes

partial, sometimes general, of the areolar tissue about the anus. The patients complain of it a little, and generally think it is the hemorrhoids which have come down. I employ only the local means I have mentioned, and if the patients are very irritable, I have the poultices sprinkled with a little oil and laudanum. I sometimes give on the first night a composing draught with syrup of poppies. The state of the patients is generally so satisfactory on the following days, that they complain only of the diet and rest which are imposed upon them.

At the end of three, four, six, eight, or twelve days, portions of sloughs will be seen on the poultices, indicating that the mortified tumours are thrown off, of which the characteristic odour they diffuse likewise gives notice. The broth diet is continued as long as the patient does not complain too much of it, and in this way the work of elimination and reparation goes on very well, as there is nothing to interfere with it. I endeavour to postpone the first motion as long as possible, without, however, annoying the patient too much. When he feels a repeated desire to go to stool, which generally occurs at the end of six or eight days I direct two or three ounces of lard melted in a water-bath, or a lavement of decoction of marsh-mallow, to be thrown into the rectum. The introduction of the tube should be managed with the greatest care, so as not to irritate or injure the wound. This duty should be entrusted to an assistant or an intelligent nurse.

The first stool is always rather painful, and the patient passes a few drops of blood; in two of my patients two or three ounces were lost without any bad effect except some increase of weakness, which I met by improving the diet. If the exclusive use of beef tea does not become too repugnant to the patient, which generally takes place, I induce him to continue it for some days, being guided by the time at which the eschars fall off, and the probable state of the suppurating surface, the extremity of which can generally be seen at the anal orifice. It is unnecessary to observe, that I discontinue the baths as soon as the pain about the anus has ceased, as they would, along with the restricted diet, lower the patient too much. My object in continuing the exclusive use of the broth, is to postpone the second motion, and to render it as small as possible. If, however, this diet does not sufficiently support the strength, or if disgust comes on, I substitute fresh eggs, gravy, and a little bread or pastry, gradually increasing their quantity. The second stool usually takes place from the twelfth to the fifteenth day, and ought to be preceded by the precautions I have detailed in reference to the first. The patient now begins to resume his ordinary mode of life, a great many go out, and some return to their occupations, taking care, however, to use an occasional sitz-bath, to foment the anus with tepid water several times a day, and particularly after having been at stool.

Such are the phenomena I have observed, and the measures I advise, after the circular cauterization of the base of hemorrhoidal

tumours, whether simple or complicated with prolapse of the neighbouring rectal mucous membrane; and from what I have stated it will easily be inferred that not only have I never lost a patient in consequence of the operation, but I have never had reason to be uneasy about my patients. I may add, that in no case have I observed the slightest symptom of pyemia to arise.—*Dublin Quarterly Journal of Med. Science, August*, 1854, *p.* 231.

77.—TREATMENT OF HEMORRHOIDS WITH VIENNA CAUSTIC, AND EMPLOYMENT OF THE HEMORRHOIDAL CAPSULE.

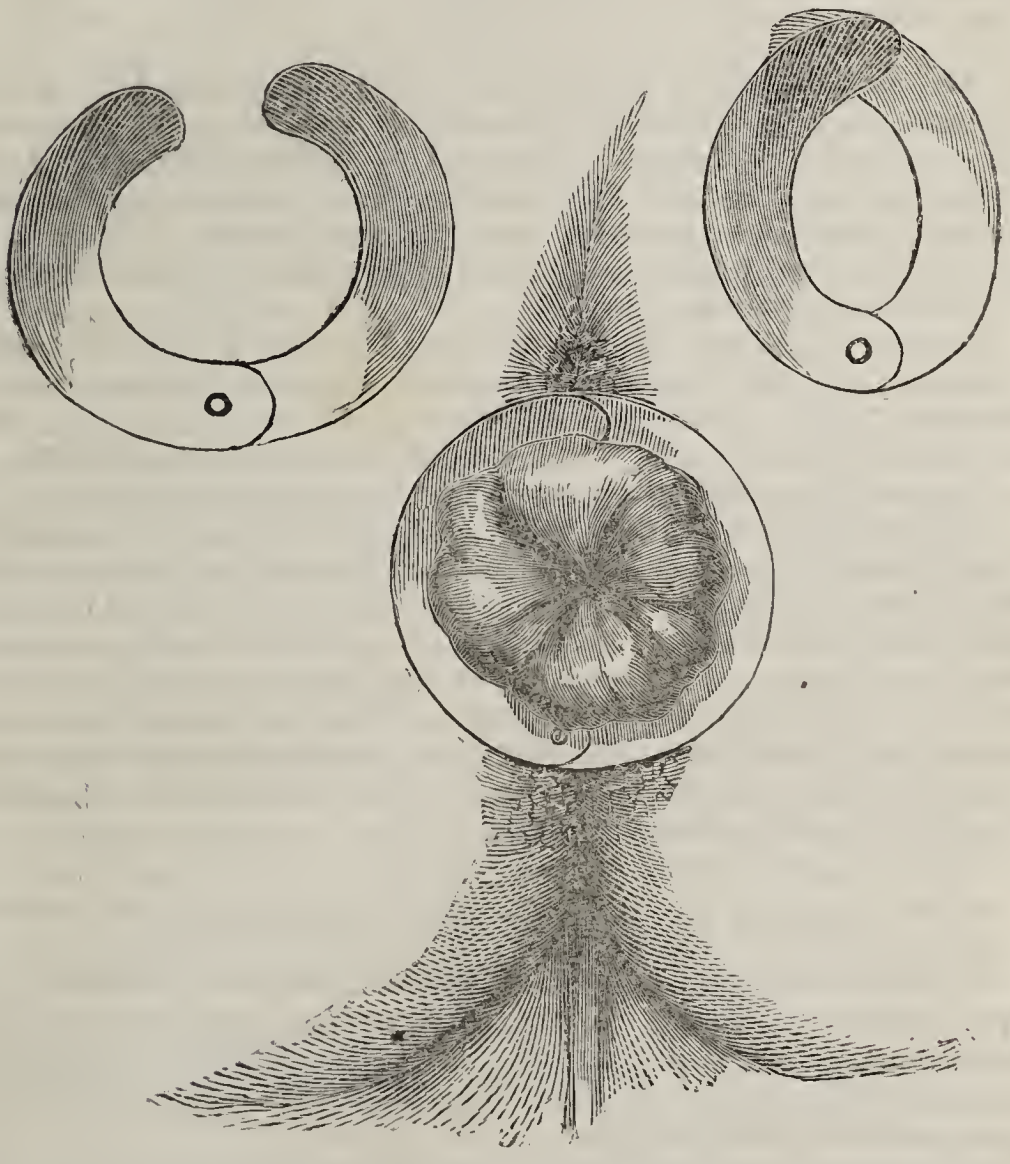
By M. Jobert de Lamballe.

Though we are advocates (observes the Editor of the 'Bulletin Générales de Thérapeutique) for the employment of the actual cautery in the treatment of hemorrhoidal tumours, we think, however, that there are cases in which we may, without inconvenience, have recourse to the use of the Vienna caustic; and we think it advantageous to our readers to make them acquainted with an ingenious instrument which M. Jobert de Lamballe has had made by M. Charrière, to render this operation more easy, and to deprive it of any danger to the patient, and to which he has given the name of hemorrhoidal capsule. By conceiving two blades of silver, or other metal, concave and articulated with each other (fig. 1.), so that their concave edges may be approximated, embracing a more or less extended ellipse, we shall have an exact idea of this little instrument, which is as simple as it is ingenious and easily managed. When the instrument is closed, as the two external edges which form the outer circumference are a little elevated, it represents exactly one of the capsules used in chemical laboratories, and the resemblance is still more striking if, instead of examining the instrument by itself, we view it when embracing an hemorrhoidal tumour (fig. 3).

As it is easy to have these instruments of all sizes, and as we can at will increase or diminish the curve formed by the two blades, it is evident that we can apply the capsule to tumours of every magnitude. If we have to operate on one or more hemorrhoids, distinctly isolated from one another, a little capsule, less ellipsoid and almost circular, is pressed successively close round the base of each, and the caustic is applied; the blades of the capsule protect the neighbouring parts, and all the tumours may be thus separately cauterized, either on the same occasion, or at an interval of several days. If the case be one in which there is a tumefied hemorrhoidal circle (bourrelet) which, though distinct at first, has become agglutinated, and forms a single mass, the lobes of which cannot be separated sufficiently to admit of their being attacked one by one, the entire is included in one larger and more elongated capsule, and the whole surface of the tumour is acted on. M. Jobert de Lamballe has recently performed this operation on a

man aged 55, who had a prominent tumour of this kind, of a bright red colour, and elevated at least two centimetres and a half (nearly an inch) beyond the margin of the anus, and formed, as is seen in fig. 3, by three tumours which were then adherent to one another, but

Fig. 1. Fig. 3. Fig. 2.



which must have been originally quite distinct. On the 15th of September the entire mass having been enclosed at its base between the two blades of an hemorrhoidal capsule, a layer of the Vienna paste was applied over the whole surface, and kept on for four minutes and a half. The caustic having been removed, and the tumour well washed, the surgeon seized each of the blades of the capsule with a forceps in order to separate them from one another. Cold lotions were applied during the following days. From the 16th the tumour was declining and diminished in size; and on the 18th a portion could

be removed with the forceps. The cauterization was repeated on the 19th. On the 23rd the eschar was completely detached. A rose-coloured protuberance which existed around the anus was touched on that day, and the next day but one with nitrate of silver. On the 26th the cure was complete.—*Bulletin Général de Thérap.*—*Dublin Quarterly Journal, Nov.* 1854, *p.* 469.

78.—*Hemorrhoids Treated by the Galvanic Cautery.* By John Marshall, Esq.—[Mr. Marshall is still pursuing his investigations on this application. He says :] I am still, as opportunities offer, prosecuting my enquiries into the advantages and disadvantages of the galvanic cautery as a remedial agent in a great variety of cases; and the accumulated experience of nearly three years will be faithfully reported ere long to the profession.

As regards internal hemorrhoids in particular, I have used two methods; one, that of absolute removal by the heated platinum wire; the other, that of destroying the substance of the tumour *from the surface* by the application of a *disc-shaped* coil of incandescent wire—in fact, operating on the same principle as that adopted by Mr. Steel.

The results of my cases, of which details will be hereafter published, clearly establish the conclusions: that small, isolated, and prominent internal hemorrhoids may be easily and advantageously removed across their base; but that a large mass (and I have dealt with very large masses) may be *best* destroyed by deep cauterizations upon it from the mucous surface. That this latter proceeding is safe and successful I can also assert; but the originator of a method is, perhaps, the worst authority as to its relative advantages over other modes of treatment.—*Association Med. Journal, March* 31, 1854, *p.* 302.

79.—ON PROLAPSUS OF THE RECTUM.

By Dr. Fleming, Surgeon to Richmond Hospital, Dublin.

[The following case shows how efficacious is the nitric acid in these troublesome affections. The patient, a young man of 24, could not remain for any time in the erect posture without the escape of the rectum to an enormous degree.]

In the absence of any protrusion, the anus is patulous, and its circumference, covered with muco-sanguineous discharge, presents numerous ulcerated chinks in the direction of its rugæ. It is so wide, and the sphincter so relaxed, that a gaping, funnel-shaped cavity is exposed, within which the fingers, placed conically, passed with ease. It and the greater portion of the rectum protruded on the slightest exertion, and constituted a tumour of considerable size, presenting somewhat the appearance of a prolapsed uterus. The circumference, at its base, exceeded, by measurement, nine inches, and a line drawn from the base to the free end,

where the orifice of the bowel existed, reached beyond four. The mucous membrane hung in loose, pendulous, and concentric folds, coated over with the ordinary tenacious and slimy secretion seen in such cases, and its submucous tissue was thickened with copious infiltration. Its surface, when first exposed, was of a bright red, which, in proportion to the duration of the prolapsus, assumed a dark congested modena colour; it presented irregular patches of ecchymoses, of adherent lymph, and of extensive ulceration. It was by no means sensitive to pressure; on introducing the two fore-fingers within the intestinal orifice, grasping the protruded intestine between them and the thumb, and measuring the intervening depth from the anus, there was so much of thickness as to give the sensation of the complete prolapse of the bowel. It was curious to remark how he restored this vast protrusion, and sometimes he did so by muscular efforts alone, without the slightest manual help. He bent forward, pressed his hands on his knees, when a gradual diminution took place in the bulk of the protruded bowel, and with a sudden gulp it disappeared, all being apparently effected by a combined and violent muscular effort. Again he failed in this, and was obliged to assist it with his hands. It is unnecessary to specify the details of treatment during the months of March and April, further than to state, that the horizontal position was enjoined, diet properly regulated, the regular action of the bowels ensured, and all the ordinary local means adopted to restore the healthy condition of the protruded bowel. On the 16th of April, although much dissatisfied, he acknowledged some improvement as to the amount of protrusion, and as to the discharge from the bowel, and the latter was obvious from the altered state of his linen, which was considerably less stained. The ulcers around the anus had a much more healthy appearance, and the rectal mucous surface was less loose and pendulous, much less congested, and the excoriated and ulcerated patches healed; yet the protrusion was considerable; any operative measures appeared to me quite unsuited to his case, as well from the nature of his constitution as from the large extent of surfaces which would be necessarily implicated in them. It occurred to me that the object sought by such could be accomplished by another expedient, and with that view I formed four equidistant radiated tracts, with concentrated nitric acid, commencing them near the intestinal opening, at the apex of the protrusion, and passing them as near as I could calculate to the upper margin of the inner sphincter. The breadth of those tracts was about a quarter of an inch, and the length two inches or so. They were well smeared with oil, and the bowel carefully returned: no pain was complained of during or subsequent to the application of the acid, which could be justly attributable to it: it was similar to that always complained of; it was relievable by the same expedients; it was not more severe during the act of defecation. There was no vesical, no abdominal irritation. From day to day there was noticed a diminution in the amount and in the frequency of the protrusion,

and the irritability and uneasiness about the rectum and verge of the anus were less.

20th April.—Fourth day from the application of the acid: report most favourable as to the progress of the case and the sensations of patient: all prominent symptoms improved. I made a careful examination of the rectum, and found in the nitric acid tracts many deep, ulcerated sulci, with defined edges; the lateral ulcerations were much more marked than the anterior or the posterior; there was no tenderness of any amount worth noting, and there was decidedly less of laxity of the mucous membrane. The ulcers at the edge of the anus were more healthy: I touched them over with sulphate of copper.

25th April.—Progress good; discharge from the rectum and anus much less; local uneasiness comparatively slight; general health greatly improved, and feeling of great comfort and relief experienced in consequence of the absence of tenesmus and frequent prolapse, as heretofore. Feculent discharges once daily, and without pain, and subsequent easy returns of bowel.

28th April.—Improvement, in every particular, progressive; obvious diminution in bulk and shape of protrusion, and mucous membrane much more tensely spread over it; ulcerated patches visible, but more limited and superficial; proportionate decrease in discharge; two ounces of an astringent lotion to be thrown into the rectum morning and evening.

3rd May.—Fifteenth day from first application of nitric acid; report most satisfactory; protrusion of bowel less frequent, occurring only once in twenty-four hours; mucous discharge also much diminished; defecation natural and without pain; can cough, sneeze, and use any exertion without any protrusion, also walks about without annoyance; outlines of previous ulcerated patches merely visible, and intervening portions of mucous membrane much more fixed, but yet loose and flabby. Pencilled those spaces with nitric acid, as in the first instance, but less extensively; effect apparently now more productive of pain, yet not very acute, and easily controlled by hip-bath and anodyne enema. Complete subsidence of all uneasiness after a few days; subsequent steady and progressive improvement in tone and in functions of bowel, so much so that on the 14th May the patient was very much improved: the bowel has not now descended for many days; its contents are discharged regularly once in the twenty-four hours, without pain, and without any appreciable amount of prolapsus, and the discharge from the anus is much less. Further more minute details of progress or of treatment would be here inappropriate. The case was witnessed whilst in hospital, at its different stages, by a very intelligent and observant class of pupils. The man left of his own accord on the 4th June, having then had full control over the prolapsus, and the most healthy action of the bowel being established. He moved about without any inconvenience—was recommended to go

to the sea-side, to bathe, and to attend to the state of his bowels. In August he called on me, on his way with his fellow-workmen to see the Industrial Exhibition, and expressed himself as being perfectly free from the prolapsus, or any other annoyance. I then examined the rectum, with Dr. M'Kenzie, of Edinburgh, who happened to be in my study at the time, and heard his report of his condition. The anus was loosely contracted, yet not patulous, and the ulcerations around appeared to have perfectly healed. There is every reason to assume that the cure has been permanent.—*Dublin Hosp. Gazette, March* 1, 1854, *p.* 37.

80.—*Prolapsus of the Rectum treated by Nitric Acid.* By Dr. M'Dowel, Dublin.—In this case at first the prolapsus occurred only when the patient was at stool, and the bowel would remain protruded until returned by the finger. After a short period, however, the protrusion occurred whenever the patient stood up, or made any exertion. Attacks of inflammation of the protruded mucous surface soon became of frequent occurrence, which rendered difficult the return of the bowel, and added greatly to the patient's sufferings. A purulent and muco-sanious discharge had become established, and proved a source of great discomfort. In fact, at this period it was found necessary to keep the patient in bed, which, for the last six months, she had scarcely quitted.

The protrusion had become permanent, and occurred to the extent of about four inches; it could be replaced with facility, owing to the relaxation of all the structures, but returned almost immediately, even when the patient lay in the recumbent position.

Various means had been employed but without benefit, when, by Dr. M'Dowel's directions, the treatment by strong nitric acid was commenced. At this period the integuments over the sacrum had begun to slough from the constant confinement to bed, which the unhappy condition of the patient rendered unavoidable.

The acid was first applied on February 16. Four white tracks were made with the acid in the vertical direction from the sphincter, down to the lowest portion of the protrusion; the bowel was then replaced; no protrusion occurred for two days afterwards. The acid was applied twice subsequently at intervals of seven days, and on the last occasion with the most complete success.

April 2.—Eight weeks have elapsed without any return of the prolapsus, and the patient, previously bed-ridden, suffering from bed sores, and debilitated in health from long confinement and want of exercise, is now able to go about as usual, and is restored to a state of health which she has not enjoyed for a very long time.

The treatment occupied a period of about three weeks.

April 29.—There has been no recurrence of the disease.—*Dublin Hosp. Gazette, May* 15, 1854, *p.* 122.

81.—*Prolapsus Ani treated by Strychnine.*—M. Duchaussay advocates the use of strychnine employed endermically near the region of the sphincter, as a means of curing prolapsus ani; and he is of opinion that Dupuytren's operation, by excision of radiating folds of skin around the anus, as well as that practised by Guersant, by means of the actual cautery, act merely by stimulating the sphincter muscle, and causing it to regain its contractility. With M. Guersant's permission, strychnine has been thus employed with success, in the case of a child, in the Hôpital des Enfants Malades.

The prolapsus arose from obstinate constipation, had lasted four years, and protruded at times four inches. Considerable improvement had followed simple laxative treatment, but the gut continued to protrude an inch and a-half after each evacuation.

The child was cured in about a fortnight by the application of small quantities (one-sixth to one-third of a grain) of strychnine to a blistered surface in the neighbourhood of the sphincter.—*Archives Gén. de Médécine.—Dublin Hosp. Gazette, Feb.* 15, 1854, *p.* 30.

82.—*Excision of Internal Hemorrhoidal Tumours.* By Henry Lee, Esq.—[In the 'Medical Times and Gazette' for August 19, Mr. Henry Smith remarks that when hemorrhoids are situated within the sphincter ani, excision is a dangerous remedy. This opinion is answered by Mr. Henry Lee, as follows:]

This assertion, involving an important point of daily application, must be admitted, I believe, with much reservation. Any operation in surgery may be dangerous, if care be not taken to secure the bleeding vessels. Before the invention of the ligature, any incision which divided a blood-vessel might be considered dangerous; and we have it upon record, that in two-fifths of the cases of internal hemorrhoids, excised by M. Dupuytren, alarming symptoms supervened in consequence of subsequent hemorrhage. Such a result is nothing more than might have been expected in this or any other part of the body, where vessels were divided and left to bleed. But here, as elsewhere, the danger disappears as soon as we have the means of securing the divided vessels. We now have the means of preventing hemorrhage from divided hemorrhoidal vessels, as readily as from any other part. The danger from bleeding after operation is, therefore, not greater here than elsewhere; and, as the fear of hemorrhage was the only objection to the excision of internal hemorrhoids, that operation may now be considered as safe as any in surgery.

In support of these observations, I may mention that, within the last few days, I have excised internal hemorrhoidal tumours in three instances, without the loss of as much as a teaspoonful of blood in any case.

The first of these patients was brought to town by Mr. Cross, of Petersfield; the second was under the care of Mr. Carter, of Hadley;

and, in the third instance, I was assisted in the operation by Mr. Harrison, of the Albany Court Yard.

The results in these cases have been most satisfactory; and, until I see reason to alter my opinion, I shall believe that (where any operation is necessary) excision, properly performed, is a safer, and often altogether a better, mode of treatment than the ligature for hemorrhoidal tumours, internal as well as external.—*Med. Times and Gazette, August* 26, 1854, *p.* 226.

83.—CASES OF FISSURE OF THE ANUS.

By John Hamilton, Esq., Surgeon to Richmond Hospital, Dublin.

[The patient in the first case (reported by Mr. Lloyd), was Arthur B., aged 32. The anus prolapsed, attended with great pain when passing a motion; it was also lax, and surrounded by loose wrinkled folds of integument, hanging like a fringe round the aperture. At the right side, rather near the coccyx, a fissure could be seen, the surface red.]

Jan. 17th.—The operation for fissure of the anus was this morning performed by Mr. Hamilton. A speculum was introduced into the rectum, and an incision made through the ulcer, beginning a little above its upper edge, carried through its base, and a little below the lower edge; there was very little bleeding, and a piece of lint was inserted into the wound.

Jan. 27th (the tenth day).—He was discharged well, the wound cicatrized, no uneasiness at the anus, and no prolapsus, the one operation having cured both the fissure and the prolapsing piles.

Fissures of the anus, as they are called, are in reality narrow oval ulcers at the margin of the anus and within it, which assume the appearance of fissures in consequence of the vertically plicated arrangement of the termination of the rectum. They generally cause the most excruciating sufferings, and after long continuance reduce the patient to a state of extreme nervous irritability. He feels uneasiness, and a sense of weight for some time previous to a motion, but the great pain is felt during the passage of the fæces, which, when they are hard and large, is dreadful. The fear of this suffering constantly causes the patient to delay for days together going to stool. But nearly as much pain is endured after the motion, continuing for some time, the period varying in different cases. In some there will be two or three hours of great suffering, in others six or seven. I have even known it last sixteen and twenty hours, till the patient was completely exhausted.

In very recent and slight cases, where the fissure is just at the margin of the anus, scarcely going within it, you will succeed in healing them by touching the fissure with a strong solution of the nitrate of silver, a drachm to the ounce of distilled water, or by very light touches with the solid caustic, and by keeping a small shred of dry

lint well in the fissure; the last is a very essential part of the treatment, and you should make your patient come to you daily after the morning motion is passed. The solution of the nitrate should be applied every second day; if the solid is used not oftener than every third day. The bowels, at the same time, kept relaxed by a few grains of powdered rhubarb and blue pill at bed-time, or a couple of teaspoonsful of the lenitive electuary.

The following is a case of the mild form of the disease:—

Mr. H. P. came to me, May 31st, 1850, with a small fissure at the coccygeal side of the anus, readily visible by separating the sides of the anus; it was red on the surface but did not go high up on the inside; not very painful at stool, bleeding a little each time. He had had it only a few days, and thinks it came on from his having been frightened at stool when the passage of the fæces was suddenly arrested. They were so hard next day that the fissure took place. I touched it with the nitrate of silver, and put a little piece of dry lint into it. On the third day a second application was made, and a gentle laxative ordered.

June 11th.—He passes motions well and without pain.

But if you have a well-marked fissure of any standing, it would be perfectly useless to try the application of caustic, which, while in such cases it gives the most intolerable pain, often lasting the whole day after, seems to exercise no influence whatever on the fissure. The established treatment is, to make an incision through the whole length of the centre of the ulcer. We owe this most effectual plan of cure to M. Boyer. His idea was, that the obstinate resistance of the ulcer was mainly due to the action of the internal sphincter, and if this was overcome, the fissure would heal. He, therefore, made a cut through the centre of the ulcer, deep enough to divide the fibres of the internal sphincter, and the successful result seemed to justify his theory. I believe, however, you will find that the division of the sphincter is not necessary to the cure; all that is requisite is an incision deep enough to go through the base of the ulcer. I was led to this conclusion by the fact, that fissure is most common at the coccygeal end of the anus, where there are no muscular fibres at all, and yet the operation is as successful as when the fissure is at the side where the muscular fibres abound. In this respect I fully agree with Mr. Syme.

You must not think that matters will always go on so smoothly, or that the mere division of the fissure will be sufficient. If you were guided by some authors who have written on this subject, you would be misled in thinking there was nothing further to do. Even in uncomplicated cases, about the third day after the operation, the part begins to get very sensitive and painful, and will continue so till the surface of the divided ulcer becomes granular, when all pain ceases, and cicatrization rapidly ensues. In other cases the pain does not materially diminish; though less, perhaps, than before the operation, the surface of the ulcer is unhealthy, greenish-yellow, and the sur-

rounding inflammation too great. You see there is something faulty in the constitution acting on the local complaint, and it is through the constitution you must act on the local disease. The tongue is loaded with yellow, the complexion is sallow. I know nothing better than slight mercurialization ; two grains of blue pill, two of powdered rhubarb, with a little extract of taraxacum, three times a-day, till the gums are slightly touched.—*Dublin Hos. Gaz., May* 1, 1854, *p.* 98.

84.—*On the Surgical Treatment of Fissure of the Anus.* By T. B. Curling, Esq.—[In fissures of the rectum from ulceration it was, till lately, usual to divide the sphincter muscle. Another and much simpler method now seems efficacious, which Mr. Copeland has practised for some time. Instead of dividing the sphincter, he makes a slight superficial incision. Mr. Curling had an interview with Mr. Copeland on this subject, and has since that time modified his former practice. He says :]

Since this interview, I have been in the habit, when treating severe cases of irritable ulcer, of making only a simple superficial incision of the part : performing, in fact, a slighter operation than the one I previously practised and recommended. The results have been in all instances quite satisfactory.

Mr. Copeland, in describing his operation, spoke of it as merely a division of the mucous membrane. I am convinced that on this point he is in error ; at any rate, that this is not sufficient ; and that, however slight and superficial the incision may be, a few at least of the fibres of the sphincter must be divided. I had occasion to examine the rectum of a lady suffering from this affection ; whilst she was under the influence of chloroform, and the parts being very lax, and in a good light, I was able to bring the ulcer well into view, and could distinctly perceive the fibres of the sphincter forming the bottom of the sore. Now it is clear that in such a case, or in an ulcer which has destroyed the mucous surface, an incision through the base of the sore must reach and divide muscular fibres.—*Dublin Hospital Gazette, June* 1, 1854, *p.* 137.

85.—ON PELVIC ABSCESS.

[The reader will find a series of most interesting cases of this affection in the 'Medical Times and Gazette' for August 12th, if he wish for full particulars. We have only room for an abstract of some of the most interesting points.]

Among the most important of the cases in which purulent collections form within the abdomen are those known as *pelvic abscesses*, in which inflammation of the cellular tissue of one or other part of the pelvis ends in suppuration. These cases have, in England, scarcely

claimed the attention which might seem due to them, as they are not very rare. Although several papers of more or less value have been published respecting them in our own country, yet the only monograph on the subject with which we are acquainted is that of M. Marchal, of Paris. The cases recorded by the latter author, amount to 75, of which all, except 15, occurred in women. If, indeed, we may be allowed to except all cases complicated with visceral disease, and limit the definition to genuine phlegmonous inflammation of the cellular tissue, it might be asserted that the disease, with extremely few exceptions, occurs only in the female sex. When met with in males, it is almost always a secondary effect of disease of the bladder or intestines, or of inflammation of the peritoneum, or of the veins about the prostate or rectum. The reason of its frequent occurrence in women is evident. The internal organs of generation in that sex are subject to much disturbance. Not only are they constantly engaged during a large part of life in functional activity, but those functions require great alteration both in the size and positions of the viscera. To permit of the latter changes, a large quantity of connective tissue necessarily exists in their neighbourhood, which it may easily be supposed is prone, when exposed to the pressure, contusion, &c., incident to childbirth, to become the seat of inflammation. Probably not a few labours are followed by some tendency to such disease, which, in the majority, subsides under treatment, without going on to suppuration. In a few, however, such a happy termination is not achieved, but there is left in some part of the pelvis an inflammatory induration, which, after occasioning to the patient various distressful sensations for a period more or less prolonged, finally ends in abscess, and discharges itself either externally or into the bowel or vagina. Experience fully bears out this description; for in a very large majority of pelvic abscesses in females, the disease is found to have followed on parturition, at periods varying from a week or two to several months. In those in which the interval is the longest, the patients almost always give the history of having been ill ever since delivery, and of having felt that all was not right with them. Of the 60 cases occurring in women mentioned by M. Marchal, 52 were consequent on labour, and several of the remaining 8, inasmuch as they were complicated with visceral disease, ought scarcely to be ranked in the same list. Of eight cases recorded by Mr. Bell, (see 'Medical Gazette,' Dec. 12, 1845, and Jan. 9 and 16, 1846), all were in women: six were immediately consequent on parturition, and two appeared to have been caused by exposure to cold while menstruating, neither of the patients having been recently delivered.

With regard to the exact part in which these abscesses originate some difference of opinion has prevailed. Dr. Doherty, one of the earliest writers on the subject, in a paper on "Chronic Inflammation of the Uterine Appendages after Parturition," considers the ovary to be the part at first involved in inflammation; other authors have

spoken of the "parts constituting the broad ligament," while Dr. Lever, with much plausibility ('Guy's Hospital Reports,' 1854) on account of the difficulty in determining this point, proposes that the disease should not be spoken of by any more definite name than pelvic "inflammation." In all probability the disease is generally located in the cellular tissue only, and may originate in any part of the pelvis.

The prognosis of pelvic abscess following parturition is probably for the most part favourable. The patients often sink into hectic under the profuse discharge which follows, but as there is no persistent cause of irritation (as in psoas abscess, or those depending on foreign bodies), they generally rally as the abscess diminishes in size. The treatment should of course consist in the most liberal diet, combined with such tonics as may appear necessary. The abscess should be opened as soon as a tendency to point in any direction is perceived. The most favourable class are those, perhaps, in which the opening is into the vagina, as a free and depending channel of exit is then procured, while no risk from the contraction of the cicatrix afterwards is encountered, as might be the case were the rectum the part selected.

[In the third case (under the care of Dr. Budd) a firm and very tender swelling was situated just within the brim of the right ilium, and extending thence deep into the pelvis. This showed itself about five or six weeks after labour.]

The abscess having shown a tendency to point at a part about an inch and a-half within the anterior superior spine of the ilium, it was to-day opened, when about half a pint of thick pus escaped. Ordered wine ℥iv.; *pt. med. et cataplasm.* Some bed sores having formed, they are to be covered with amadou, rendered adhesive by means of lead plaster.

[On May 16, the discharge had nearly ceased, and the wound nearly closed.

The next case was under the care of Mr. Erichsen.]

Three days after delivery, she had suffered a feverish attack, attended by much headache, and which lasted about a week. As this illness passed off, she began to suffer from shooting pain in the right iliac fossa. These pains continued to recur, and, five weeks later, she discovered a swelling in that region, and a second one more towards the median line. After a time, these two swellings joined into one large one, and from this she suffered frequently what she described as "dreadful" pain. Her bowels, at the time, were confined, and the stomach so irritable, that she vomited almost everything she took. With these symptoms she was admitted into an Hospital, where leeches were applied to the part with some benefit, and, after a time, she was discharged much relieved. While an inmate there, she had much pain and irritability about the bladder. After her return home, the tumour again became more perceptible, and about six days ago,

while lying quiet on the sofa, she had once or twice felt what she compared to something snapping in it. This account of her previous history, it must observed, was obtained from herself only; but, as she was an intelligent person, there appeared no reason to mistrust it.

Present Condition.—She is emaciated, and suffers from hectic fever, with evening exacerbations, and a troublesome cough; bowels confined; pulse weak and rapid. Directly above the symphysis pubis is a tumour of about two inches in diameter, hard at its borders, and soft and fluctuating in its centre. On pressing it a distinct gurgling noise may be produced. Its borders extend on each side into the iliac fossæ, and on the left the gurgling noise may also be caused. It is very tender, and subject to constant aching pain. She states, that several times during the last few days she has had a distinct perception of wind passing with her urine. The urine has an acid re-action; it contains pus, but has no fæcal odour.

April 27.—The catheter having been introduced, air passed by its orifice, together with purulent urine; the gas that escaped had no smell. The catheter was not stained. The remedies prescribed consist in anodynes and expectorants for the relief of the cough, and a full nutritious diet has been ordered.

May 2.—The symptoms during the last few days, have continued as before, and several times the patient has herself distinctly felt the rumbling of the air in the tumour. This morning no gurgling can be perceived, and the skin over the swelling is discoloured, as if it were about to break. An examination by the vagina, and one also by the rectum, have been made, but nothing material was discovered.

4th.—The tumour burst spontaneously this morning, and, some air and pus having escaped, its walls collapsed. A poultice has been applied over it, on removing which, an escape of gas always takes place. Mr. Erichsen has enlarged the opening in a direction upwards.

18th.—Since last date great improvement has been made; the wound continues to discharge, but has a healthy appearance, and the cavity seems to be filling from below.

June 11th.—Discharged, a very small fistula being all that remains. She has regained almost her usual health.

Remarks.—It was very difficult, in the above case, to account for the presence of air in the cavity of the abscess. There were no indications of communication with the bowel, inasmuch as fæces never escaped by the bladder, or pus by the rectum, nor had the gas any fæcal odour. It is possible that the gas was spontaneously generated from the decomposition of the pus; but, had such been the case, there would probably have been present more severe constitutional disturbance, and the discharge would have been attended by more of fetor. Perhaps the most likely supposition is, that the air had been derived from the vagina, either by transudation through a much-thinned membrane, or by means of a valvular aperture so small as to have escaped notice. Another interesting feature in the case is the opening

of the abscess into the bladder, which is not a usual occurrence. The opening was probably small, and did not allow of the escape of urine backwards into the abscess sac. The complication did not appear to materially interfere with the progress of the case.—*Med. Times and Gazette, Aug.* 12, 1854, *p.* 161.

[Dr. Priestley demonstrates the confining or directing influence exerted by the different fascial layers. He says]

The peritoneum lining the pelvic cavity is much thicker than that covering the intestines or other abdominal viscera. It is so reinforced by strong fibrous tissue in this region that it may well act the part of a fascia in offering resistance to, or directing the contents of, a pelvic abscess. It is everywhere closely adherent to the muscular structure of the uterus, except on the narrow lateral margins of that organ; and, by this firm adhesion of the peritoneum, and the thickness of the uterine walls, the rarity of cases where the abscess bursts into the uterine cavity may be accounted for. Almost equally rare, however, are instances of pelvic abscess opening into the bladder. This is to be explained, not by the close adhesion of the thickened peritoneum, as in the case of the uterus, but, probably, from the loose attachments of the bladder with the surrounding parts, which are necessary on account of the varying degrees of distension of that organ. A space of considerable extent exists between the superior pelvic fascia below, which forms the true ligaments of the bladder, and the peritoneum above, constituting the false ligaments of that organ. This anatomical arrangement would permit the bladder to be pushed aside by an abscess forming in this locality.—*Med. Times and Gazette, Sept.* 2, 1854, *p.* 239.

ORGANS OF URINE AND GENERATION.

86.—IMPERMEABLE STRICTURE OF THE URETHRA CURED BY DIVISION IN THE PERINEUM.

By R. H. Meade, Esq., Bradford, Yorkshire.

[In this patient, 50 years of age, the stricture had existed for twenty years. The difficulty of passing an instrument seems to have gradually increased for a considerable period. Mr. Meade says:]

On introducing a bougie into the urethra, I found an excessively irritable and sensitive state of the whole canal, which made it even difficult to reach the stricture. When I did so, I found that it was seated in the posterior part of the urethra, behind the bulb, and considerable thickening and induration could be felt in this situation through the perineum and from the rectum. There seemed to be a great tendency to spasm, and the slightest pressure of the instrument

on the stricture caused great pain. He said that he always made water in a very fine stream, and frequently only in drops; that both night and day there was almost constant inclination to empty the bladder, and the attempts to do so were always accompanied by great straining and forcible involuntary action of the bladder. During the last two years he had been subject to repeated attacks of spasmodic retention of urine, requiring the frequent use of opiates (both by the mouth and in suppositories), and the warm bath, for their relief.

[Numerous large crystals of oxalate of lime were found in the urine, The bladder and urethra were very irritable, and for this reason nitro-muriatic acid was given, and the patient ordered to remain quiet for some weeks. At the expiration of a month the urethra was less irritable, but the bougie was grasped by the strictured urethra and could not be passed.]

I found that the stricture and the whole of the urethra were so exquisitely tender, that though I used very trifling pressure, the patient suffered so much for several days after every attempt, that he could not summon resolution to have the trial repeated for a week or ten days, or sometimes more, so that no progress was made.

I also applied a small portion of potassa fusa to the stricture; but instead of doing good it greatly increased the irritation, and brought on retention of urine. About two months after I first saw him, a small abscess formed in the perineum, which burst and was succeeded by a fistulous opening, through which a few drops of urine escaped when he made water.

The man was very anxious that something should be done, and had made up his mind to go to Edinburgh, and put himself under the care of Mr. Syme, unless I could relieve him. I told him, that I thought the best way would be, to divide the stricture in the perineum, and thus introduce a catheter into the bladder; and, though it was a proceeding of some difficulty and danger in a case where no instrument could first be passed through the stricture, still it might be accomplished, and would afford a fair prospect of permanent relief. He readily consented, and with the assistance of my friend Mr. Coates (the late House-surgeon of our Infirmary), I performed the operation as follows, on the 14th of Feb., 1854. After administering chloroform, and fastening the patient in the position for lithotomy, I introduced a grooved staff of rather small size down to the stricture. The tissues in the perineum were hard and thickened, so that, though he was a thin man, there appeared to be a considerable depth of parts covering the point of the instrument. I now cut down upon the extremity of the staff, and after dividing the textures in the raphé fully to the depth of half an inch, I got into the groove. I made an opening in the urethra sufficiently large to introduce the point of my finger, and endeavoured to pass a small grooved probe through the stricture, from the wound towards the bladder, but without success. Could I have

done so, it would have been easy to have laid the strictured part of the canal open, by running a small knife along the groove towards the bladder. Finding that the stricture was impermeable, I introduced the fore-finger of my left hand into the rectum, and feeling for the prostate, took a small straight and narrow bistoury in my right hand, and passing it by the wound into the urethra, thrust it onwards in the natural direction of the canal, for nearly an inch towards the apex of the prostate gland. I now pushed on the staff in the line of my incision, and had the satisfaction to find it enter the bladder. The staff being removed, a No. 8 silver catheter was introduced in its place with a little trouble, and clear urine flowed through it.

There was very little hemorrhage during the operation, and all bleeding appeared to have ceased before the patient was removed to bed; in the evening, however, a little blood flowed through the catheter, which was retained in the bladder. On the following day (15th) he was quite easy, the urine was clear, and there was no constitutional disturbance.

On the 16th he was not quite so well; the catheter appeared to be producing a good deal of irritation of the bladder, and the flow of urine through it was impeded by portions of clotted blood and ropy mucus; I therefore removed it, and introduced an elastic gum one in its place. The pain and irritation continuing, the patient took this out of the bladder himself during the night, and on the following day I found considerable difficulty in re-introducing it, for a good deal of inflammatory swelling had occurred in the neighbourhood of the wound. The attempts which I made brought on considerable arterial hemorrhage, and I was obliged to put the patient under the influence of chloroform, when I succeeded in getting a silver catheter into the bladder, and then restrained the bleeding by plugging the wound round the instrument with lint soaked in tincture of matico. There was no return of hemorrhage: I allowed the catheter to remain for five days in the bladder, when I removed it, and introduced an elastic one in its place without any trouble, which I kept in for six days more. The wound in the perineum had by this time almost closed, only a few drops of urine escaping from it when the patient evacuated the bladder; and there appeared no further necessity to retain any instrument in the urethra; I was, therefore, content with passing one daily for another week, and then taught the patient to introduce one for himself on alternate days, which he soon managed without any difficulty. At the expiration of a month from the time of the performance of the operation, a No. 8 catheter (as large a one as the orifice of the urethra would easily admit) entered the bladder with the greatest facility, so that from the sensation communicated to the hand it would not have been known that there had ever been a stricture.

Three months after the operation, there was no tendency to contraction of the canal, but I recommended him to continue the use of the bougie constantly, introducing it every two or three days. A small

fistulous opening still remained in the perineum, but this occasioned so little inconvenience, that I could not persuade the patient to submit to any further treatment for its removal, as the application of a heated wire, &c. His general health had greatly improved, the irritability of the bladder had almost subsided, he had become stout and strong, and was able to follow his usual occupation.

I have been induced to relate this case from the acknowledged difficulty of treatment which exists, when a very tight stricture is combined with great irritability of the urethra, rendering the introduction of bougies almost impossible. No exact rules can be laid down for the management of such cases, but the surgeon must be guided in each individual case by his own judgment, and select such a mode of operation as may appear best fitted for the occasion. Something, perhaps, may be learned, especially by the young practitioner, from the perusal of detailed cases, and from a description of the particular steps followed in each operation.—*Medical Times and Gazette, Aug.* 12, 1854, *p.* 159.

87.—ON URINARY CALCULUS ADHERENT TO THE WALLS OF THE BLADDER.

By R. H. Meade, Esq., Surgeon to the Bradford Infirmary.

[This patient was 62, and on admission into the Bradford Infirmary, a stone was at once detected. After some preliminary treatment, Mr. Meade proceeds as follows to describe the operation :]

The operation was performed on the 1st of October, 1852, and nothing unusual occurred in its progress until the stone was grasped in the forceps, when a sensation was communicated to the hand, as if it was breaking down in the instrument; and considering, from the state of the urine, that it was probably composed of the mixed phosphates, and, therefore, soft and friable, I at first thought that this was the case ; but I almost immediately noticed that the distance between the handles remained unaltered, and, gently withdrawing the forceps, the stone was extracted without any difficulty. It was now seen that the calculus had been adherent to the coats of the bladder, and that its separation had communicated the sensation in question.

The place of attachment was out of the reach of the finger, the the patient being a short and rather fat man, with a deep perineum ; but, on the re-introduction of the forceps, a rough surface could be felt on the posterior wall of the bladder, from which another small portion of calculous matter was removed.

The man recovered from the operation without any serious symptoms, but the wound was rather longer than usual in healing, and he continued for some length of time in a weak state of health, the urine still depositing a phosphatic sediment. He was discharged from the hospital two months after the operation, but was several months more

before he completely recovered; he eventually did so, however, and I have seen him several times lately; and find that he is able to follow his usual occupation, and is now quite free from all irritation of the bladder. When it was found that the calculus had been adherent to the posterior part of the bladder, it was remembered that before the operation the stone could only be felt with the sound, when the latter was held in a particular position, viz., with the handle depressed as far back as possible between the patient's thighs, and this was especially noticed when the patient was in the recumbent position; it excited, however, no particular attention at the time.

The calculus presented some points of interest independent of its adhesion to the bladder. It was orbicular, and depressed in shape, measuring nearly an inch and a-half in its transverse diameter, but not quite an inch in thickness. It was attached by a kind of peduncle to the bladder, the adherent surface not being more than half-an-inch in extent. The exterior was of a pink colour, when recently extracted, and highly crystalline in structure, being composed of crystals of an unusually large size. On being analysed by Mr. Thomas Taylor, it was found to consist of nearly pure crystalline phosphate of magnesia and ammonia, capping a small mass of the mixed phosphates. The stone has been deposited in the Museum of St. Bartholomew's Hospital.

The above case is chiefly worth recording, on account of the rarity with which a stone is met with adherent to the coats of the bladder. All authors agree that this is very seldom found, and though such cases are alluded to, I can find few or none distinctly recorded.

Sir B. Brodie says, in his 'Lectures on the Diseases of the Urinary Organs,' "You will hear not unfrequently of calculi which adhere to the bladder; but you may be assured, nevertheless, that this is a very unfrequent occurrence. Ask all experienced surgeons, and they will tell you what I tell you now, that adhering calculi are rare. It is not very uncommon to find a diseased bladder, a portion of which is incrusted with calculous matter; but that is a very different thing from an adhering calculus, and not likely to be mistaken for a stone in the bladder." (Edit. 3rd, p. 260.) He then goes on to explain how this incrustation of the bladder takes place, but he says nothing respecting the mode in which calculi can become adherent; except in one case, in which he removed a stone which was fixed to the inner surface of the bladder, and arose in consequence of an original malformation; the calculous matter having formed round a small portion of bone, and two imperfectly formed teeth.

I am indebted for the most probable explanation of the mode of attachment of the calculus to the bladder that can be offered, during the life-time of the patient, in the case I have related, to my friend Mr. Paget, of St. Bartholomew's, to whom I sent the stone. He says in a note which I received from him:—"I think it very likely that the broken part was once continuous with another portion contained

within a pouch of the bladder, and of course remaining there still. The mass removed is too heavy to have been held in position by mere adhesion with incrusted calculous matter." The stone had probably been once entirely encysted, and then produced comparatively little irritation; but one portion of it being exposed to the action of the urine, had gradually increased in size by the successive deposition of crystals on its surface, until it gave rise to so much pain and general disorder of the health, as to lead to steps being taken for its removal.—*Med. Times and Gaz., Aug.* 12, 1854, *p.* 158.

88.—ON LITHOTRITY.

By Dr. S. Fenwick, Newcastle.

[We ought first to consider to what class of cases lithotrity ought to be confined. In many it is inadmissible. Dr. Fenwick endeavours to show from his own experience when and how it ought to be performed. The following advantages, in many cases, are most important:]

1st. Instead of lying for weeks upon the back, with the urine dribbling from the wound, none of these persons were confined to bed beyond a few days. And although, by the use of chloroform, we can remove all suffering during lithotomy, we cannot prevent the constant soreness and pain that follow the use of the knife during the many weeks succeeding it.

2nd. There was no danger incurred of important parts being wounded, such as the rectum or the vasa deferentia, as there would have been had the patients been subjected to the older operation.

3rd. The cure was more rapid. Thus, in one case, only a few pieces of a large stone remained at the end of a fortnight, and in three or four weeks the man was able to work. After lithotomy, however favourably the patient has progressed, it is long before his former strength is regained; but after successful lithotrity, he often improves after each operation, and, as soon as the stone is removed, he is frequently able at once to return to his employment.

4th. The danger of death is much less after lithotrity. It must be remembered that all the above cases were men between 30 and 65, at which ages a glance at the accompanying table will show that the chances of death are exceedingly great after the lateral operation.

	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80
Number of cases	1466	731	205	141	123	161	126	19
Number of deaths	112	71	31	24	27	44	39	7
Average mortality ...	1 in 13·08	1 in 10·20	1 in 6·61	1 in 5·83	1 in 4·59	1 in 3·65	1 in 3·23	1 in 2·71

I have operated with the lithotrite between fifty and sixty times, and

with one exception, have never seen dangerous symptoms. Indeed, I have never seen any unpleasant results, excepting in cases in which my own imprudence and want of skill has caused them. I am perfectly willing to allow, that, as each stone usually requires five or six operations before its removal, the patient's risk is greater than the above statement may at first appear to convey; but we have it so entirely in our power to see him in a fit state before each operation is attempted, and to do much or little, according as he is able to bear it, that I consider the chief matter in the discussion is to show that the placing of a lithotrite in the bladder, and the crushing of a stone in that cavity, is an operation which, under certain circumstances, is attended with but small risk of dangerous consequences.

But it must be borne in mind, that these advantages are only to be expected from lithotrity under certain circumstances; and it is, therefore, a matter of the greatest importance that it should be clearly determined when these exist. The cases I have above quoted as perfectly successful, agree in the following conditions:—

1. The ages were between 30 and 65; there was, therefore, neither the excessive irritability of youth, nor the debility of old age, to contend against.

2. The urethra in all these cases was capable of admitting instruments of considerable size, and, consequently, of permitting the ready passage of the fragments of the calculi. The bladder was healthy, and although in some cases very irritable, yet in all able to retain six or eight ounces of fluid. The kidneys were in a natural condition, and there was, consequently, less fear than in another class of cases, to which I shall shortly refer, of inflammation following the operation.

3. In all, the calculus was loose in the cavity of the bladder; in each it was readily crushed; and in no instance did its diameter exceed an inch and a quarter.

Where the above conditions co-exist in any case of stone, I believe it ought to be laid down as a surgical rule, that the lithotrite should be employed, and that lithotomy should only be regarded as an amputation is, in a simple fracture of a limb. No surgeon ever thinks of removing a leg for a simple fracture, unless some more serious injury be also associated with the broken bones, and a few cases of such accidents, terminating in gangrene, and eventually requiring an operation, do not shake his confidence in the ordinary rules of treatment. In like manner, it is not reasonable to abandon lithotrity, or the attempt to lay down rules for its performance, because an occasional case, performed under the most favourable circumstances, proves unsuccessful. I am desirous of drawing attention to the necessity of general rules for treatment in this disease; because, in the majority of cases, the above favourable conditions co-exist at one period or another of the complaint: and, if the above rule should prove to be correct, and be generally acted on, few persons above the age of 30 will ever be subjected to lithotomy. At present, however, a large proportion of the

cases presenting themselves to the operating surgeon do not present the above conditions, and I will, therefore, attempt further to show under what circumstances lithotrity should still be preferred.

I have had no experience in crushing stones in children, and out of twenty cases of calculus which I have treated within the last six years, only two were under puberty; and as neither of these was a proper case for the use of the lithotrite, I must speak entirely from theory. The general rule appears to be to employ the knife, and, in the majority of cases, I believe it to be correct. We have in children usually the stone relatively larger to the urethra, and, consequently, to the lithotrite, than at a later period of life; so that frequently considerable difficulty must be experienced in reducing the foreign body to fragments in its subsequent expulsion. But, what is more unfavourable to the success of lithotrity, the system is more irritable; thus, I have known in this hospital death ensue in a child simply from sounding the bladder on suspicion of the existence of a calculus. A glance at the table will also show that, at this period, lithotomy is a very successful operation; so that little advantage is to be expected from the lithotrite. I do not think, however, that this instrument should be altogether abandoned even in children. I have seen calculi of so small a size extracted, that a few movements of the blades would have been sufficient to have broken them up.

The following rule ought, therefore, I believe, to be employed:—Whenever, in children, the stone is so small and soft that two or three operations will be alone required, and where the child is in good health, and of a phlegmatic constitution, lithotrity should be preferred; in all other cases, recourse ought to be had to the knife.

The condition of the urinary organs is necessarily one of the most important considerations before attempting either operation, and no means should be neglected which may enable the surgeon thoroughly to ascertain whether or not they are diseased. I have treated cases with the lithotrite, in which strictures were present; but when the narrowing of the urethra is extensive and permanent, it forms a complete bar to the operation. Where hypospadias exists, with narrowing of the entrance to the urethra, of which I have had two instances complicated with stone, it is better to lay open the part with the knife. In other strictures, if slight, and lower down in the canal, I have employed dilatation alone. It often happens, that after one or two sittings, spasmodic stricture occurs. Whenever this is observed, the surgeon should immediately leave off all operative proceedings for a few weeks, and attempt to lessen the irritability of the passage by medical treatment. The spasmodic action, in itself, is of no consequence, but it is a mark of that irritable condition that often precedes inflammation of the bladder and kidneys.—*Med. Times and Gazette, June* 17, 1854, *p.* 617.

Simple enlargement of the prostate does not prevent the success of lithotrity, unless it is very considerable. I have never operated upon

cases of this nature in which there was any very great difficulty in introducing the instruments; and this, I should imagine, will be what is chiefly to be feared. It might reasonably be expected that fragments would be more apt to be retained when the gland is increased in size; but where it is only moderately enlarged, I have not found, in practice, that such is the case. Where there is acute inflammation, or suppuration of the prostate, lithotrity is inapplicable, as every motion of the instrument must bruise the inflamed part, and must tend to produce an extension of the disease to the bladder and the kidneys. In a case of suppuration of the prostate the knife should be used, not only as the best plan for the removal of the calculus, but also to give exit to the pus. This disease occasionally follows the operation of of lithotrity, and if no other contra-indicating circumstance exists, should be always as soon as possible treated by incision. I shall, afterwards, return to the consideration of this point. There are few, if any, cases of calculus, in which some degree of inflammation of the bladder is not present; indeed, the greater number of the symptoms of stone arise from this source. There is no affection, the extent of which it is so important to discover, before determining to which operation the patient ought to submit; and the slightest consideration is sufficient to show this. In lithotomy the bladder is at once opened, the exciting cause of the inflammation removed, and the organ afterwards left at almost perfect rest, which is the state which is the most favourable for its regaining its natural condition; while, in lithotrity, a fresh source of irritation is added in each attempt to break up the foreign body, and the number of sharp pieces, which are the result of those proceedings, often add to the inflammatory action. It is evident, therefore, that the stone should never be crushed, when the cavity in which the manipulation must be performed is in a state of acute inflammation. This, I believe, is the most important rule which can be laid down respecting this operation, and the success of every surgeon will depend, chiefly, upon his strict adherenee to it. As an illustration of the effects which sometimes, though not always, follow an infringement of it, I append the following case.

Case.—A man, about 60, who had been affected with symptoms of calculus for many years, consulted me respecting them. A sound was introduced, and a stone discovered, which I conjectured to be of no great size, and to be composed of lithic acid. The urethra was healthy, but the bladder was inflamed and irritable. I put him under medical treatment for a few weeks; but, at last, yielded to his desire for the operation. The bladder would scarcely contain more than two or three ounces of water, and only a very small piece of stone was chipped off, the instrument, which was a badly formed one, slipping two or three times. The pain in passing urine was considerably increased after the operation; but, by rest and treatment, he was able in a short time to walk about again. As he was anxious to return home, he again urged me to operate, and I unfortunately consented.

The bladder was on this occasion so much inflamed as scarcely to bear any water; but I passed the lithotrite, and crushed a fragment or a small stone, while the organ was empty. The pain was greatly increased after this; the pulse became quick, the tongue foul, and the digestion greatly deranged. The urine was albuminous, depositing a large amount of pus and lithate of ammonia. He improved in about a week after the operation, and I recommended him to return home for a short time. He was exposed to cold when waiting for the steamboat, and, on his reaching home, was attacked with shiverings. He became much worse; the pulse became quicker, and the urine more purulent, while the emaciation of his body rapidly increased. On examination, no tenderness could be found, either in the course of the urethra or the prostate, and no increase in the size of the gland. From these facts, coupled with the other symptoms, I imagined that the cause of his unfavourable condition arose from inflammation of the kidneys. There was no evidence of peritonitis. He died about six weeks after the last operation. Upon examination of the body, the urethra and prostate were found healthy; the bladder was thickened and inflamed, and contained the stone which I here show. Both kidneys were very large, and so soft as to tear in their removal. The capsules peeled off very readily; the surfaces were of a dark red colour, dotted with yellow points, where small deposits of pus existed. The increase in the bulk of the organs arose from enlargement of their substance, and not from dilatation, as is so frequently the case; the lining membranes of the pelves were thickened and inflamed, and contained pus. There was no peritonitis or other disease apparent.

I attribute the fatal result in this case to two errors—one of operating when the bladder was not fit for it; the other, of repeating the operation too soon; and, as far as I have seen of lithotrity, these are the two usual causes of failure. Although this is the only unsuccessful case in my own practice, I have seen death produced by inflammation of the bladder alone, without any extension of the disease to the kidneys. It is, manifestly, of the greatest importance, that we should have, if possible, some test by which we may ascertain whether or not the bladder is fitted for the operation. Neither the violence of the pain ordinarily suffered, nor the amount of discharge in the urine, is a sufficient indication of the degree of inflammation likely to follow any operative proceeding. I have always found, that the quantity of water which the bladder is able to retain is the best guide for the surgeon. A bladder, violently inflamed, can no more retain water, than an inflamed stomach can bear what is placed in it without vomiting, and violent efforts at expulsion are the results of the attempt in either instance to fill the inflamed cavity. If, in any case, it be found that the bladder is capacious, and able to retain eight or ten ounces of fluid, the operation (providing other circumstances are favourable, and it is properly performed) will be generally successful; but, if on the contrary, the cavity is so much inflamed as not to bear three or four

ounces of injection, any attempt to crush the stone will usually prove dangerous. The reason of this is pretty obvious; a calculus produces, by its movements, the same kind of injury to the mucous membrane that the lithotrite does, and if the bruising of the stone has been, for months or years, borne without much injury, there is a prospect that the irritation of the instrument will also cause but little mischief; but if, on the contrary, the calculus alone has been able to excite violent inflammation, it is probable, that the manipulation in the same cavity will further add to its violence. If, in any case, the bladder cannot bear a few ounces of fluid, should the patient be at once abandoned to lithotomy?

The rule which ought to be laid down should be this: that if the bladder will contain four or six ounces of fluid, and the other circumstances are not unfavourable, the stone should be crushed; but, if injection of this quantity cannot be endured, the inflammation should be reduced by treatment; and, in case this cannot be effected, the knife should be employed for the removal of the disease.

It has been much discussed whether lithotrity or lithotomy is best fitted for cases complicated with disease of the kidneys. I suspect that the applicability of either method of operating depends, less upon the condition of these organs, than upon the state of the bladder. There are, of course, many in which the kidneys are so diseased that the removal of the calculus is of no avail. The stone which I now present was taken from a patient of Mr. Stephens'. The man was about twenty years of age, and had suffered from symptoms of the complaint for many years. When I saw him he was greatly emaciated, and affected with hectic. The urine was purulent, and obstructed in its passage from the bladder. By means of a long pair of lithotrity forceps, the urethra was cleared of a quantity of calculous matter, and the stone was afterwards detected in the bladder. From the belief that the kidneys were incurably diseased no operation was recommended, and he died a week afterwards. Upon *post-mortem* examination the bladder was found healthy, but both kidneys were dilated into large bags, their cortical substance being in a great measure absorbed.

But where the kidneys are not incurably diseased, I think lithotrity, as a general rule, should be employed. Every surgeon must have remarked how frequently disease of these organs produces dangerous consequences in all operations where the knife is used, and how often fatal results ensue under such circumstances from wounds which would otherwise be considered trivial. It must be, therefore, in these cases important to avoid such deep incisions as are practised in lithotomy, as the condition of the patient is likely to produce unhealthy inflammation of the parts traversed in the operation. Wherever, therefore, in a case of stone complicated with diseased kidneys, the bladder is able to bear the injection of six or eight ounces of fluid, I believe lithotrity should be employed, unless some other circumstances should forbid it.

I will make a few remarks upon the treatment which I think ought to be observed after unsuccessful cases of lithotrity.

I have known dangerous symptoms arise from inflammations of the kidneys, of the bladder, and of the prostate gland and urethra; and the affection of each of these parts requires attention. I have seen chronic inflammation of the kidneys follow the operation, and afterwards removed by a repetition of the crushing; but it requires great care, lest, by such treatment acute disease should be set up. The most perfect rest should be always enjoined, both before and after the use of the instruments, and all irritation of the bladder should be subdued by opium and the warm bath. Acute inflammation of the kidneys is one of the most fatal consequences of lithotrity, and deserves particular remark, inasmuch as the indications of its presence are often overlooked. Frequently, general fever, accompanied by a very white tongue and loss of appetite, is the only symptom presented by the patient; and often the combination of these with great irritability of the bladder misleads the surgeon, and induces him to suppose that it is only inflammation of the bladder against which he has to contend. When such symptoms are present, no operation should be thought of, and all the attention should be directed to allay the disease as soon as possible.

When acute inflammation of the bladder follows lithotrity, active measures should be immediately taken to relieve it, as it may spread upwards to the kidneys, or forwards to the prostate gland and urethra. In any case it prevents a repetition of the operation while it is allowed to exist. If the inflammation should return after every attempt to crush the calculus, the operation ought to be abandoned, and the bladder should be cleared of the stone by lithotomy. Inflammation of the prostate and urethra not unfrequently follows lithotrity, and often terminates in suppuration. Whenever dangerous symptoms follow the operation, a careful examination ought to be made through the rectum, as serious disease of these parts may exist without the general symptoms being sufficient to direct the attention of the surgeon to it. As soon as suppuration has taken place, it ought to be the rule to employ lithotomy, as both the abscess is thereby opened, and also the bladder is at once relieved from the stone. It is, I believe, of little use in such cases to wait with the hope of repeating the operation of crushing, as the movements of the instruments will necessarily irritate the parts which have already been inflamed. The following well-treated case of Mr. George Heath's illustrates these points, and shews the practice which, I believe, ought always to be carried out.

Case.—A man, about 20 years of age, consulted him with the ordinary symptoms of stone in the bladder. An attempt to crush the calculus failed, excepting that a few fragments were scraped off with the lithotrite. The patient went on well for a week, when a severe attack of inflammation came on, which continued for several months. Finding that he was gradually sinking, Mr. Heath resolved to perform

lithotomy. An abscess of the prostate was opened in the operation, and a mulberry calculus extracted from the bladder. He was immediately relieved of all his symptoms, and rapidly recovered.

The same plan should be adopted where abscess forms in the perineum, and when inflammation of the urethra or prostate gland seems to cause it; for not only do such patients usually recover, but it is generally inexpedient to irritate the parts again with the lithotrite.

With respect to the method of performing the operation, I will merely direct attention to such points as I have either seen errors committed in by others, or in which I have committed errors myself. I have before frequently mentioned the importance of regarding the capability of the bladder to retain fluid as a test of the applicability of lithotrity; but this rule requires some reservation. In many instances a patient forces out the injection only from nervousness, and not from any real incapacity to retain it. It is, therefore, advisable, in all such cases, to have an intelligent assistant, who may keep him in conversation while the operator very slowly and gently fills the bladder. By this means I have frequently been able to operate where at first I almost despaired of success. It is often useful to have the urethra grasped with the hand, so as to prevent the escape of the water, otherwise many, from impatience, will gradually empty the bladder during the operation. I have seen many cases, from neglect of these precautions, rejected, as unfitted for lithotrity, whose calculi, I feel perfectly sure, might have been easily crushed. Although I lay such stress upon fully injecting the bladder, it is only for the reasons above given; for I have many times seized stones in bladders perfectly empty, and such attempts are to be condemned rather on account of their liability to produce subsequent inflammation, than from any fear of doing injury during the operation.

Many writers upon lithotrity have been in the habit of treating the fear of catching the mucous membrane in the blades of the instrument as only theoretical. This is not the case, as in one instance of an old man, I repeatedly caught the sides of the bladder, but always discovered the mistake by the soft feeling experienced on attempting to close the lithotrite. In order to avoid this mischance, which will only occur when the stone is not seized, it is only necessary to be careful, in not thoroughly closing the blades after each unsuccessful attempt to include the calculus.

After injection, the surgeon should always, by suddenly changing the patient's position, attempt to throw the stone into the back of the bladder, as not only are the necessary manipulations more readily performed in that part, but he thereby also avoids the risk of bruising the prostate, and the anterior part of the bladder, which is the most sensitive and the most susceptible of inflammatory action. In many cases, where the stone is rather large, it will be found lying near the anterior part of the organ, and inclined to that side on which

the patient is in the habit of resting. It is, therefore, often of advantage to direct him to change the side on which he has usually slept, as a weighty stone often forms a depression of the bladder in which it remains. Before passing the lithotrite, the exact position of the calculus should always be ascertained by the catheter, in order that as little sounding as possible may be used with the heavier instrument. The lithotrite should be passed on at once to the stone, without any of those thumpings of the bladder which are so frequently used in ascertaining the existence of a calculus. The only advantages which can be obtained by striking a bladder with a sound or lithotrite are, either to assist the surgeon in feeling the stone, partly or wholly concealed in folds of the mucous membrane, or to enable him to dislodge it from some position it occupies. Both of these can be obtained by very gentle motions, and the slightest violence to a sensitive organ like the bladder cannot be too much condemned. The blades should never be opened until the instrument is in contact with the stone in the fundus of the bladder. This I would direct attention to more particularly, because I have seen them attempted to be opened before the instrument had entered the bladder, and prostatic inflammation was the result. There should be no fishing for the stone in a random manner, as is so often done, but the attempts to enclose it should be conducted upon a proper principle. In small or very moveable calculi, it is the best plan to pass the closed lithotrite to the stone, to open the blades, and, placing them as near as possible at right angles to the axis of the stone, to make gentle pressure upon the bladder immediately beside it. This, of course, makes the part of the bladder depressed by the instrument lower than that portion occupied by the calculus, and it therefore drops in between the expanded blades. Where the stone is so large or so heavy that it does not move easily, it is the best plan gently to insinuate the lower blade below it, and thus seize it. In all cases, however, it should be grasped as much as possible near its centre, as it is thereby more rapidly broken up. Impaction of the fragments not unfrequently takes place, and should be treated according to the nature of the obstruction. Single pieces which are stopped by their size or angularity are best removed by the long forceps, such as I now show; but, where it is caused by large quantities of soft calculus, it is better to pass a large-sized catheter down to the part, so as to dilate the urethra, and make the patient force his urine, while the instrument is gradually withdrawn. In crushing the stone, the upper blade should be always pressed down by the finger of an assistant, while the operator uses the screw. If this is not done, the outer layers are very apt to break off, and the remainder of the calculi to fall from between the blades.

As regards the lithotrite, the chief want is some mechanical contrivance which will subject the stone when once caught, to the repeated action of the screw. But in the instruments as usually constructed there are some faults which ought to be avoided. The lower blade is

often too much curved instead of being flattened. By the curve there is, it is true, greater strength, but the stone is not so readily grasped as when it is flatter. In the upper blade the teeth should be always so placed as to present a sharp surface at either edge, so that, if the stone be grasped obliquely, it may still be held in its position.—*Med. Times and Gazette, June* 24, 1854, *p.* 641.

89.—NEW OPERATION FOR VESICO-VAGINAL FISTULA.

By Dr. Wagner, Dantzig.

The margins of the fistula are left untouched; the operation is commenced by performing two semilunar incisions meeting at both extremities, so as to surround the whole periphery of the defect. These incisions are made about a line distant from the edge of the fistula, (or even further, according to the extent of the cicatrix tissue), and penetrate through the whole depth of the mucous membrane of the vagina. The operator then separates the mucous membrane from the submucous fibro-areolar tissue to the extent of a line or more all around the fistula, commencing from the incisions above mentioned, so that two flaps of mucous membrane result, one on each side.

It will be easily understood that four flaps are now formed, two on each side of the fistula: 1st. The two last-mentioned, formed of mucous membrane, the free margins of which, meeting at both extremities, correspond to the incisions with which the operation commenced. I shall call these the external or inferior flaps. 2ndly. Two flaps, consisting of the other tissues of the vagina, the layer of fibro-areolar tissue with organic muscular fibres, and the external layer of fibrous tissue with numerous elastic fibres, and very vascular. The free margin of these flaps is formed by the surrounding margins of the fistula; these internal, or, according to the position of the parts and the anterior wall of vagina, superior flaps, are broader than the external ones by the distance in which the first incisions were made from the margin of the fistula. It is important to remember this fact for the third stage of the operation. The sutures are then applied as follows:—

The sutures at both extremities are merely passed through the flaps of mucous membrane; all the other sutures are first passed through the external flap on one side from above downwards, then through the internal flap in the same direction; the needle is then passed through the same parts on the opposite side in inverse order, from below upwards; all four flaps being thus taken up by each suture. The sutures being drawn tight, the double closure is obvious. The parts brought into close apposition are the raw margins, and raw submucous surfaces of the external flaps, and the inferior raw surface of the interior flaps, the margins of which (they being broader than the external flaps) are turned inwards towards the cavity of the bladder, and, being closely approximated, effectually prevent the urine from coming into contact with the parts below.

I will leave you to judge of the merits of this proceeding, and only add that it is not well adapted for large fistulæ, and quite impracticable in cases where the tissues surrounding the fistula are indurated to a great extent, as the first incisions must be performed on healthy mucous membrane. I do not think that a great number of cases have been operated on in this manner as yet, so that I can offer no judgment as to its comparative merits, except theoretical deductions, which certainly speak in its favour. I think that this description is the first hitherto attempted.—*Med. Times and Gazette, May* 6, 1854, *p.* 468.

90.—ON SPERMATORRHŒA.

By John L. Milton, Esq.

[One of the most celebrated writers on this subject is Lallemand. In the treatment of spermatorrhœa he advocates the application of nitrate of silver to the neighbourhood of the vesiculæ seminales. Mr. Milton seems to differ in opinion from this eminent author, and the following remarks seem to prove that Lallemand was not always correct. Mr. Milton, however, thinks that a granular or strictured state of the posterior part of the urethra from gonorrhœa may require caustic, or that irritation of the urethra caused by the spermatorrhœa may require the bougie, or nitrate of silver, but that this is a different thing from using the remedy for spermatorrhœa itself.]

It has been urged that there is often an ulcerated, inflamed, or injected state of the mouths of the seminal ducts and the neighbouring part of the urethra, and that so long as this is kept up, irritation will be conveyed to the seminal vesicles, and, as a result, spermatorrhœa will be maintained; and this assertion has been repeated again and again, as if it could gain strength by repetition. But what in the first instance caused this irritable ulcerated state? Was it the first link in the chain of disease? Clearly not; the urethra is quite healthy at the beginning of spermatorrhœa; it is only when it has reached a very advanced stage that the extreme tenderness of this canal, and the redness of the orifice, are met with, and not always then; I have seen it in its worst form without any apparent change, and unaccompanied by tenderness. It is self-evident, then, that it is either an effect or a complication of the spermatorrhœa, and to treat the disease here by beginning with its effects would be exactly the same as if a surgeon, in a case of irritable bladder in the female, were to limit his treatment to cauterizing the excoriations caused by the constant flow of urine over the vulva; or if a physician were to cauterize the rectum when diarrhœa produces heat and smarting there.

But the advocates of cauterization point to its success; one fact they say is worth a hundred theories: thousands of cases have been cured by it, &c. To which, however, they might add, that thousands of cases have not been cured by it, which might have been cured by

other means; that where it succeeds, it is from its counter-irritant action, and that this action may be much more surely obtained by the use of gentler and safer counter-irritants.

Then, again, they say, what is to be made of those cases of spermatorrhœa caused by gonorrhœa? Does not the disease ensue in these cases from the gonorrhœa spreading backwards and settling in the posterior part of the urethra, where it sets up an irritation communicated to the seminal vesicles, whence arises spermatorrhœa?

Plausible as this style of argument may appear, it rests on a train of statements which have yet to be thoroughly examined. In the first place, when the action of gonorrhœa extends to the ejaculatory ducts at all, so that its presence can be determined, either the suppurative inflammation spreads, and then it rarely stops short of producing swelled testicle, or it is a rapid transient irritation, like that producing chordée and irritable bladder, which, though it may aggravate, can rarely, I think, bring on spermatorrhœa. In the second place, it has to be shown that the seminal vesicles have anything to do with this disease.

There are certainly cases in which the gonorrhœal action is kept in the posterior part of the urethra, and where at the same time the spermatorrhœa has become worse after the infection has taken place. Here cauterization may be productive of benefit. I have succeeded with it myself; but I have succeeded still better with other means, and in more than one instance, when I had proposed first to blister the penis, and then to resort to the caustic, found the latter no longer necessary after the blister had been applied. As there can only be two sides to a question of this kind, it follows either that the arguments I have used are wrong, or that the invariable employment of caustic, on the opinion that it is a specific for spermatorrhœa, must fall to the ground.

Gleet of the Prostate and Seminal Vesicles not a form of Spermatorrhœa.—Mr. Hunter, the Newton of medicine, whose true merits, to my thinking, even overshadow those of the giant of the physical sciences says:—"Diseases of the vesiculæ seminales are very familiarly talked about, but I never saw one. In cases of very considerable induration of the prostate gland and bladder, where the surrounding parts have become very much affected, I have seen these bags also involved in the general disease, but I never saw a case where they appeared to be primarily affected." So far as I can learn, all other trustworthy observations confirm this view. I have never heard of nor seen a case in which disease of the seminal vesicles alone was detected; in a few rare instances they become mechanically involved by the spread of the destructive action, but they generally remain free in the most extensive disease, either of the urinary or generative organs.

The principal argument made use of to prove that the seminal vesicles are the receptacles of the semen, is the presence of spermatozoa or zoo-sperms in them. M. Lallemand, on examining thirty-three

bodies, found spermatozoa in the seminal vesicles of thirty of them; but only in the testicles of two, one of whom had died from a fall, the other of gastro-enteritis, which he thinks would go to show that these animalculæ are formed in the testes, and then pass into the seminal vesicles. The next argument is, that small, brilliant, granular bodies are found in the urine of spermatorrhœa patients; that they are met with in the masses of mucus squeezed out by these patients after going to stool; and as they are found in the seminal vesicles, *of course* these are the receptacles of semen. These are also met with at all times in the semen of healthy men, and in great abundance in that of birds just before the testes become ripe. The third is, that spermatozoa are wanting or few in the organs of castrated persons.

Mr. Pritchard says, "The molecular motions of Dr. R. Brown—viz., those seen under a deep magnifier in a drop of water, in which finely divided gamboge or other organic substances have been triturated; these motions have been compared with the spermatozoa of animals and plants, *which are now considered as physical motions only.*" Here, then, we have the alpha and omega of scepticism and credulity; the one elevating these little cells—for they are nothing more—into the essential part of the most important of all secretions, the other viewing them as *a mere appearance*, produced, I presume, by causes acting from without.

In cases where the generative power seemed quite lost, the testes having secreted no semen for a long time, I have found the vesicles containing their usual fluid. Among other observations, I may mention that last year I dissected with great care the generative organs of a man who died in St. Luke's Workhouse, at the age of eighty-five. The testicles had long performed no function at such an advanced age; they were very pale and somewhat wasted; the vas deferens was permeable, but very small, and its walls rigid; but I could observe no difference in the appearance and contents of the seminal vesicles from what I had noticed in young people.

It is asserted that the discharge which takes place in one form of gleet—viz., that of a thick mucus after going to stool or passing urine, is semen; that it comes in great part from the seminal vesicles; and that the disease is consequently a form of spermatorrhœa. Speaking of this view, Mr. Hunter says, "First we may observe the discharge in question is not of the same colour with the semen, and is exactly of the colour of the mucus of the prostatic gland and of these bags, (the seminal vesicles.) It is not of the same smell, and indeed it has hardly any smell at all. The quantity evacuated at one time is often much more considerable than the evacuation of semen even is, and it happens more frequently than it could ever do were the discharge semen. It is a disease which often attacks old men, where one could hardly suppose much semen to be secreted; and we find that those who are affected with this disease are no more deficient in the secretion and evacuation of the semen in the natural way than before they

had the disease. If the mind be at ease, this will take place immediately after a discharge of semen, as well as before, which could not be the case were it semen. Further, if those that labour under this complaint are not connected with women, they are as subject to nocturnal discharges from the imagination as persons who are perfectly sound."

This close and comprehensive reasoning shows the depth and grasp of Hunter's clear, broad mind; and it is only surprising to me that the tissue of errors stated by M. Lallemand on this subject should have been admitted, after the truth had been set on so a secure basis by Mr. Hunter. But then we are told this substance has the peculiar smell of semen when rubbed between the fingers. Unfortunately for this part of the argument, it happens that the true semen has no smell! The semen, *when ejaculated*, has a peculiar odour, *but then it is mixed with the secretions of the vesiculæ seminales, the prostate, and Cowper's glands.*

Of one thing I am quite sure, persons subject to both kinds of discharge have no sensation when this mucus or vesicular gleet, as I shall henceforth take the liberty of calling it—is passing away, except that of a bulky body going along the urethra, and yet when they have emissions, are conscious of the usual sensation. This gleet may occur without seminal emissions, these without it; when both co-exist, one may be cured quite independent of the other. The microscope, it is said, gives proof that it is semen by making visible the spermatozoa; these cells, however, are found in the vas deferens, and it is possible some few may be ejaculated at the same time the vesiculæ seminales are emptied.—*Lancet, April* 29, 1854, *p.* 467.

91.—ON SYPHILIS.

By William Acton, Esq.

[There is a great difference between what is called the *infecting* chancre which is an *indurated* sore, and the *unindurated* sore. The former communicates constitutional syphilis, the latter does not. The infecting indurated sore ought to be treated by mercury, the *unindurated* form need not be so treated. Hence the difference of opinion amongst medical men is often founded on a misapprehension. Mr. Acton says:]

In accordance with the principles I learnt in Paris, I have always advocated treating simple unindurated sores without mercury, and I hope my writings have discountenanced the too general employment of that mineral; but private practice during the last twelve years has more fully confirmed my opinions, that the indurated chancre cannot be treated without mercury; and Ricord corroborates, with his sanction, the universal treatment of the infecting chancre with a long-continued course of mercury, and he thinks that it is of little use

employing this valuable remedy unless it is continued for some months, not only for the purpose of removing the induration which attends this form of chancre, but for guaranteeing the system against the occurrence of secondary symptoms, which inevitably will occur unless the surgeon perseveres in its use long after the healing of the sore.

Within the last few days a case strongly corroborating the necessity of giving mercury in proper doses has come under my care:—A fair-haired man came to consult me, with spots of syphilitic psoriasis on his body, and most severe pain on one side of his head, together with an indurated sore on the penis, with its usual attendant, chronic enlargement of the glands of the groin. The patient told me that he had contracted the disease three months ago, when he was treated by an homœopath with the usual small doses of mercury. About a month ago the mercury had been left off, and potash had been given, but without any benefit; and, his confidence failing, he had come to consult me. Here, then, is one out of many cases I could cite of the little good of small doses of mercury.

I may mention that the doctrine of treating indurated sores with mercury appears to be generally received as the recognized treatment in Dublin, where formerly the opinions of Carmichael were generally admitted—viz., that most of the forms of syphilis could be cured on the non-mercurial plan.

In France, at the present day, salivation is considered rather an unfavourable circumstance than otherwise; and as soon as this symptom arises, mercury is left off, to be resumed the moment the gums cease to be swollen. But it is a curious fact, that it is often a very difficult matter to induce salivation in the ordinary cases of indurated chancres; and notwithstanding the considerable doses of the mineral, and the long continuance of the treatment, the action of mercury is shown rather by the disappearance of the symptoms of syphilis than by any affection of the gums, persons labouring under induration apparently showing little tendency to salivate.

The preparation still most commonly employed in Paris is the proto-iodide of mercury, to the exclusion of almost all the others. In London I still, however, find it as objectionable as when I wrote the second edition of my book, when I stated that this preparation usually produces colic in the damp, cold climate of England, consequences which have caused me to exclude it from my own practice, and obliged me to prefer frictions, blue-pill, or the grey-powder.

The Phagedœnic Chancre.—I saw several of these sores in the course of treatment by a new plan which Ricord has lately introduced into practice—namely, by destroying the whole of the unhealthy surface with a red-hot iron, having previously placed the patient under the influence of chloroform. Cases which formerly resisted every form of treatment, and lasted many months and even years, are now readily cured by the actual cautery in a short time, the surgeon taking care to cover the surface with strips of ammoniacum and mercurial plaster

after the sloughs have separated; the internal treatment still consisting in giving the tartrate of iron, which succeeds alone in the less obstinate cases. In private practice, cases requiring the use of the red-hot iron, are very rare, but in hospital practice they are more frequently met with, and we occasionally witness cases, several inches in circumference, extending at one corner, while they imperfectly heal in the other; these are called serpiginous sores. The variety which we meet with most frequently in London is the phagedænic sore, attended with induration. This is a form not unfrequently seen in consultation, and in which the actual cautery is of no avail, but which must be treated by mercury, at the same time the system is supported by bark, wine, or steel. This variety is attended with the worst forms of secondary symptoms taking on the character of secondary ulcers, rupia, and the bones are early attacked, and I have met with it much more frequently in London than in Paris, influenced probably by food and climate, which are found to be such active agents in causing the diversity we notice in the forms of syphilis..

Constitutional Syphilis.—Little doubt can, I think, exist, that all the milder forms of secondary symptoms are as common in Paris as in London. In going through the French hospitals we witnessed all the varieties of that Protean disease, but we saw but few of those severe and afflicting cases that we daily witness in London, and the aggravation of the forms in London we attribute in a great measure to the climate, food, and intemperance which is commonly met with in England. A case came under my notice, within the last few months, which strongly impressed me with this opinion. A nobleman was travelling in Spain, and at Seville, after connexion with a Spanish lady, he observed what he considered to be an excoriation. As this gave him little inconvenience, he merely applied some lint and water, and continued his journey. The little sore remained for some time in *statu quo*, as long as he was subject to the climate of the continent; but in a few weeks after his return to this country he became alarmed at the increase in the sore, and consulted me, when I found a hard, indurated mass, which was very characteristic of the true infecting chancre, accompanied with well-marked psoriasis palmaris. This gentleman's health was still excellent when he consulted me, and I felt fully convinced that had he remained in the south these constitutional effects would not have occurred; and I mention the case as illustrating the inexpediency of contrasting syphilis and its effects, with or without treatment, in different countries, as what is true in the south may not be verified in the north; and I can hardly believe that constitutional syphilis is more amenable to the non-mercurial treatment in Scotland than in England. Those interested in investigating the subject further, I must refer to my last edition for further curious details.

Another peculiarity that deserves the attention of the English surgeon, is the frequent occurrence of secondary ulcers in London as

compared to Paris. In the latter capital, these late constitutional affections are very uncommon; with us, in England, they are frequently met with; and the previous treatment, with or without mercury, appears to have nothing to do with their occurrence. I should further say that in London there is a great tendency, in many of the forms of constitutional syphilis, if left to themselves, to take on an ulcerative form.—*Lancet, July* 8, 1854, *p.* 7.

DISEASES OF THE SKIN.

92.—TREATMENT OF ERYSIPELAS.

By Dr. James S. Hughes, Dublin.

[Early in the attack of erysipelas, when the pulse is hard and full, without gastro-intestinal irritation, Dr. Hughes gives an emetic, but this must be done very early in the case. He prefers tartarized antimony, either alone or combined with ipecacuanha. He then gives the tartarized antimony in solution, in minute doses at long intervals. As soon as the fever and erysipelas begin to abate, he commences with bark and nutritious diet, combined with wine or brandy. The most important point to decide, is, when to commence with wine or brandy. Dr. Robert Williams, of London, commences with wine very early in nearly all cases of this description, and we think justly so as the affection is one which has more frequently a malarious origin than not. Dr. Williams puts his patients on a milk diet and gently opens the bowels, and then always allows them from four to six ounces of port wine daily. On this subject Dr. Hughes remarks:]

In the administration of wine in any given case of erysipelas, you ought, however, in my mind, to be guided, both as to the period of giving it and the quantity required, by the age, constitution, and habits of life of the patient, and by the type of the fever; thus, if you are called in the early stage of the disease, and if a high degree of fever exists, instead of pouring in wine at once, you should first unload the stomach and bowels by suitable medicines, and exhibit diaphoretics, after which wine may, according to my experience, be given, with greater safety and advantage: if, on the contrary, this first stage should have lapsed, or the attack has been ushered in by a low form of fever, the sooner you order wine the better.

In some cases, lately under our observation, we found six or eight ounces of wine during the twenty-four hours, sufficient; whereas, in others, as you are aware, it became necessary to order more than double that quantity within the same period. In hospital practice, where the patients have been more or less accustomed to the use of ardent spirits, we have found brandy, or malt whiskey, in suitable quantities, to be better stimulants than wine. In cases of erysipelas in which the patient loses his power of swallowing, liquid food should

be introduced into the stomach by means of the œsophagus tube; or, nutritious and stimulating enemata should be administered to him at proper intervals; for, we should ever hold in recollection, the possibility of persons recovering from this disease under the most unpromising circumstances. And here, let me impress on you the vital importance of sedulously watching, in all these cases, the state of the patient's bladder. In my first lecture I told you, that although patients in the advanced stages of erysipelas frequently labour under incontinence of urine, yet, that retention of urine sometines occurs in the latter stages of the disease; therefore, examine the condition of the patient's bladder, at each of your visits, not trusting to the nurse's report, who may, possibly, mistake stillicidium urinæ for incontinence of urine; and should retention have taken place, you will, of course, introduce a catheter to unload the bladder, and have the operation repeated at proper intervals.

Bronchitis was, as you are aware, a prominent symptom in Austin's case, and in him we found support of the system by wine and light nourishment, in judicious quantities, as necessary as in the low forms of external erysipelas. In this variety of bronchitis, the application of sinapisms and blisters proved highly beneficial.

In the local treatment of the lighter forms of true erysipelas, the application of finely levigated flour, or hair powder, affords much comfort to the patient; in some instances, especially when the disease is situated in the lower extremities, the use of the nitrate of silver, as recommended by Mr. Higginbotham, appears to limit the disease; in more severe cases, where the vessels of the skin are in a highly congested state, puncturing the surface freely with the lancet, as proposed by Sir Richard Dobson, affords relief; in a few instances, we have found the solution of sulphate of iron, as recommended by M. Velpeau, apparently of some advantage; and both Dr. Snow, of London, and Mr. Busk, of the Dreadnought, speak favourably of the employment of collodion to the surface of true erysipelas.

The topical remedy, however, which proved especially useful in the most unpromising cases of the prevailing erysipelas, was the employment of mercurial ointment to the inflamed surface. The mercurial inunction requires to be used in these cases with considerable caution; the diseased surface should be covered with the ointment, and the application renewed at proper intervals; but, if we do not watch the effects of the inunction with care, the patient may, to our great annoyance and his discomfort, become suddenly hyper-salivated: in Robertson's case, three drachms of mercurial ointment had scarcely been used to the face and forehead, in divided partions, and at short intervals, when salivation set in, but from that moment all his symptoms improved, although we had previously looked on his case as one of the most unlikely to recover that we had met with during the session. Whilst using the mercurial ointment, externally, in erysipelas, we must not lose sight of the constitutional treatment.—*Dublin Hospital Gazette, May* 15, 1854, *p.* 116.

93.—*Arseniate of Iron in Herpetic and Squamous Eruptions.*—M. Duchesne Dupare has read a memoir on this subject before the Academy, at the conclusion of which he advances the following propositions as the result of his researches:—

1. Arseniate of iron possesses, in common with all other arsenical preparations, unquestionable remedial properties, applicable to the treatment and cure of herpetic and squamous affections of the skin.

2. The great advantage of that substance is, that it may be administered in sufficient doses, without giving rise to any of the consequences with which various other arsenical preparations have been justly reproached.

3. The arseniate of iron, whether given singly or in combination with other substances, ought always to be administered in graduated doses commencing from one-twentieth, one-tenth, or even one-fifth of a grain, according to the age, the constitution, and above all, the state of the digestive organs of the patient.

4. Numerous facts accurately observed authorize M. Dupare in concluding, that a daily dose of one-fifth of a grain of arseniate of iron, uninterruptedly repeated during the necessary time, is competent in the adult to effect the cure of an herpetic or squamous affection, however extensive or long-established.

5. No absolute rule can be laid down with respect to the duration of the anti-herpetic treatment by arseniate of iron, for this must vary in accordance with the differences of age and constitution, the extent and severity of the disease, and, more than all, perhaps, in proportion to the degree of toleration which the digestive organs manifest for the remedy.

6. An anti-herpetic treatment by arseniate of iron in no degree excludes the employment of topical remedies of acknowledged utility, and it is materially assisted by the internal or external use of certain non-sulphuretted mineral waters. MM. Serres, Andral, and Rayer have been commissioned to inquire into the merits of this new remedy. —*Gaz. des Hôpitaux.—Dublin Hos. Gazette, Sep.* 15, 1854, *p.* 255.

94.—*Use of Tincture of Iodine to Prevent Pitting in Small-pox.*—Dr. Crawford, Physician to the Montreal General Infirmary, advocates the employment of a saturated solution of iodine in spirits of wine, as a powerful means of allaying irritation, and also of preventing pitting; he brushes the tincture freely over the face once or twice daily, from the earliest period of the eruption in which it is practicable, and directs this treatment to be persevered in during the maturation of the pustules. The earlier the application is commenced, the more efficacious he considers its influence over the disease; the immediate effect produced is pain, which speedily subsides, and the relief which then ensues to the sense of itching is so manifest, that of late he has extended his application more generally over the body.

A series of cases, treated in this manner, are detailed by Dr. Crawford, occurring in his own practice and that of his friends; of which the most interesting is a return of an epidemic among the Iroquois Indians at St. Regis, in 1849, treated by Dr. Bergin: he states, that "the entire face was painted in eighty-five cases of confluent or semi-confluent small-pox, out of which only seven exhibited any marks, and these were slight; half the face was painted in seventy cases of grave disease, of these sixty-one were free from any marks on the painted side, five were badly pitted, four slightly on the painted side, while the unpainted side had numerous marks and pits, exhibiting a very striking and marked contrast." Three hundred cases, in all, came under Dr. Bergin's care, of which two hundred were very severe, either being confluent or partially so: there were but eight cases of modified variola observed. Twelve died during the epidemic, one of whom suffered from a hemorrhagic type of disease.—*Montreal Monthly Journal, Nov.*, 1853.—*Dublin Hospital Gazette, Feb.*. 1, 1854, *p.* 16.

95.—*On Water-Strapping as a Surgical Application.* By C. Holthouse, Esq.—[Mr. Holthouse says, that wet-strapping is superior to ordinary plaster in ulcers of the leg. He maintains for it the following advantages:]

1st. Its innocuousness, being entirely free from the irritating effects of the latter, and never producing inflammation of the skin, or the eruption of pustules or vesicles.

2ndly. The comfort the patient experiences from its application.

3rdly. Its cleanliness.

4thly. The ease and quickness with which it is removed, from its not adhering to the hairs of the part.

5thly. Its cheapness.

6thly. It may be made the vehicle for the application of remedies.

The material made use of may consist of linen or calico, bleached or unbleached, and the older it is, provided it be not rotten, the better it answers the purpose. It must be cut or torn into strips of varying length and breadth according to the part to which it has to be applied; the strips must then be immersed in water till thoroughly saturated, when they are fit for use. If the disease to be treated be an ulcer on the leg, the strips should be about two inches in breadth, and of a length exceeding somewhat the circumference of the limb; they should then be applied exactly in the same manner as plaster, each piece overlapping a portion of the one immediately below it; in fact, the directions given by Mr. Baynton for strapping up the limb may be strictly followed in the application of the water-strapping, save and except that his directions to remove the hair from the part may be dispensed with; a roller must afterwards be applied in the ordinary manner.

Four cases in illustration of this method of treatment, and of its

beneficial results, were then given; one being an ulcer of the leg of fourteen years' standing, that had resisted repeated attempts to heal it at other hospitals; another, a case of eczema impetiginodes, affecting both lower extremities, and of three years and a half duration; a third was a case of a crushed thumb, followed by gangrene and subsequent amputation; and the fourth was an amputation of the thigh, for extensive disease of the knee-joint and upper third of the leg.—*Lancet, July* 29, 1854, *p.* 52.

96.—*Charcoal for the Prevention of Smell from Gangrenous Sores.*—It is well known that dry charcoal will effectually absorb any noxious or offensive gas which can be made to pass through it. On this power Dr. Stenhouse's disinfecting respirators depend for their efficiency. The difficulty in applying it in hospital practice has, however, arisen from the difficulty of keeping it at the same time dry and in a uniform layer around the part giving rise to effluvia. Mr. Wormald's plan consists in sprinkling freely between two sheets of cotton wool a thick layer of powdered charcoal, and then "quilting" them together together in small segments, so that the powder is retained securely in its place. The pads thus prepared may be of any size, according as required to wrap round the end of a stump, or to cover a superficial ulcer. The sloughing sore having been dressed in the ordinary manner, and a little lint or wool so placed as to absorb any discharge which may flow, over all is laid the charcoal quilt, which is then lightly confined by a bandage. It forms, in addition to its disinfectant properties, a very soft and comfortable envelope, more especially if the sore be in such a part that the patient is obliged to lie on it.—*Med. Times and Gazette, July* 1, 1854, *p.* 11.

97.—*Treatment of Favus.*—From the observation of about a dozen cases of severe favus (diagnosis by the microscope in all), recently treated by Mr. Startin at the Hospital for Skin Diseases, we can speak with great confidence of the efficiency of the following ointment. It is the Ung. sulph. comp. of the Pharmacopœia of that Institution. ℞. Sulph. sublimati lbss.; hydrarg. ammonio-chlorid. ℥ss.; hydr. sulphureti cum sulph. ℥ss. Leviga simul, dein adde olivæ olei ℥iv.; adipis recentis ℥xvj.; creosoti ♏xx.; misce. To correct the state of general health, Mr. Startin commonly orders simultaneously a mild course of the iodide of potassium, but this, we suspect, has but a small share, if any, in the local result. Often when the scalp has been for many years thickly covered with the peculiar favus crust, four or five nightly applications of the above ointment have sufficed to make it perfectly clean. So long as the patient will continue regularly to use a small quantity every day, the disease may be prevented from reappearing, and the condition assumed by the scalp under its influence might easily be mistaken by the inexperienced for one of complete

cure. As soon, however, as the inunction is suspended, the eruption reappears. This liability we have known, in more than one case, to extend over nearly a year, and probably it may for much longer periods. The ointment, however, which does not smell much, need only be applied at night, and may be washed entirely away every morning, so as to entail but little inconvenience on the patient. The hair will, to a considerable extent, grow during the treatment, provided that the scalp has not been too much destroyed. In a most disgusting disease for which as yet no real cure is known, it is much to be in possession of an almost certain means of ensuring its absence. The ointment no doubt acts as a parasiticide. Before its first application it is desirable to clear away the crust as much as possible, either by fomentation or a poultice.

We may remark, that the ointment mentioned is used by Mr. Startin in the treatment of scabies, and also in that of the contagious form of porrigo.—*Med. Times and Gazette, June* 10, 1854, *p.* 594.

98.—TREATMENT OF PHAGEDÆNA.

For a considerable period past, a mild form of Hospital phagedæna has been prevalent in the various London Institutions. In very rare cases have fatal results ensued, and in the majority, beyond the local condition, no urgent symptoms have developed themselves. It has generally attacked superficial wounds, whether those resulting from accidents or operations, and, in a few instances, even stumps have been affected with it. The treatment which has certainly been found of most general benefit has been the application of pure nitric acid. On board the Dreadnought Hospital-ship, where it has prevailed severely, the acid has, we believe, been found most successful. In the London Hospital, Mr. Ward informs us, that he has carefully watched upwards of twenty cases, and in no single one of these has the gangrene spread after the application of the escharotic. In St. Mary's Hospital, some remarkable cures have also been effected by its aid. In a case under the care of Mr. Coulson, a man, in good health, admitted on account of a laceration on the dorsum of the right foot, had the wound so severely affected by phagedæna, that amputation was seriously proposed. The nitric acid was freely applied, by soaking a piece of lint, and then pressing it into the sore; it was allowed to remain seven hours, and completely achieved its intention. The gangrene ceased to spread, the sore took on healthy action, and rapidly cicatrised. Neither in this nor in any one of several other cases in which the dorsum of the foot was the affected part did any sloughing of the tendons follow the use of the acid. It appears to be in cases of simple phagedæna that the local use of nitric acid is most to be depended upon, since those of syphilitic origin not unfrequently resist its influence. A case of the latter character, occurring in a young and seemingly healthy woman, was lately under the care of Mr. Stanley, in St. Batholomew's Hos-

pital, and, in spite of all measures, ultimately terminated in death. Nitric acid had more than once been freely applied, and opium, cinchona, chlorate of potash, &c., had been fairly tried. We mentioned briefly, at page 264 of this Journal for Sept. 9, 1854, a case of cancrum oris, under the care of Dr. Baly, in which the acid arrested the phagedænic action after the internal use of large doses of chlorate of potash had quite failed to do so. In the Middlesex Hospital, the favourite treatment for phagedæna is by opium pushed freely until its effects become apparent. Some very successful cases have been cured by this plan. It is observed, that there seems scarcely any limit to the quantity which may be borne, and that, generally, before any narcotic effects become apparent, the sore takes on a healthy action. Now and then the acid succeeds admirably in syphilitic cases; as a rule, however, they seem more amenable to constitutional than local measures. On this account, we but seldom see a simple trial either of the acid or any other one remedy alone. The following case, in which the only change of treatment to which the result could be referred was the application of the acid, is worthy of mention. A prostitute, aged 26, was admitted on Feb. 1, 1853, into St. Thomas's Hospital, under the care of Mr. Le Gros Clarke. She was suffering from a large and deep phagedænic sore on the left labium. The treatment consisted in the use of wine in liberal quantities, and of a draught containing full doses of ammonia and bark. A morphia pill was given each night, and the nitric-acid lotion was applied to the sore. This plan was persisted with for three days, during which the sore slowly spread. On the fourth day, the phagedænic action had much increased, and it was determined no longer to delay the use of the strong acid. The woman was very ill, feeble, and without any appetite. By means of a piece of lint, the fuming nitric was freely applied to the whole sore. Only a few minutes' pain was complained of. On the following day, the sore presented an almost clean surface, and it afterwards rapidly cicatrised. Exactly the same general treatment had been persisted with throughout. This case is an example of what is very often observed, viz., that the pain produced is but very transitory, and is much less severe than it is commonly esteemed.

The most convenient mode of applying nitric acid is by means of a glass brush; in the absence of which, however, a glass rod succeeds very well. To the use of wood or of lint there is at least a theoretic objection, on account of their permitting the charring effects of the fluid.—*Med. Times and Gazette, Oct.* 28, 1854, *p.* 445.

99.—*Treatment of Bubo.* By John Hilton, Esq.—Some cases of suppurated bubo, which have recently been treated by Mr. Hilton, in Guy's Hospital, have well illustrated the efficiency of counter-irritation, as a means of procuring the absorption of pus. The application which Mr. Hilton employs is a solution of nitrate of silver of the

strength of one drachm to two of water, with the addition of about three drops of the strong nitric acid. This is painted freely into the skin over the inflamed gland. Its effect is to produce great soreness of the skin and much pain, which is usually followed by rapid diminution in the size of the enlargement. Mr. Hilton informs us, that he has long used the remedy, and now considers the cases of bubo, which require opening, as quite exceptions to the rule. In several, in order to afford proof that the fluid absorbed was really pus, it was examined by a grooved needle, prior to the treatment, the puncture being at once re-closed. Even in those instances in which ultimately it becomes necessary to make an external opening, great benefit in the limitation of the suppurative action, and the absorption of the surrounding hardness, results from the previous counter-irritant treatment. The plan is applicable to many other diseases besides glandular abscesses; in fact, to almost all in which the absorption of recent inflammatory deposit either purulent or fibrinous is desired. We reported a case in the 'Medical Times and Gazette' for Dec. 17, 1853, p. 629, in which it had been effectually used to remove an induration of tissues around the femoral artery, which had so obstructed the vessel, as to cause a tubular dilatation. Superficial abscess in the cellular tissue may also be so treated. Chronic non-suppurated glandular enlargements and swellings of one or other lobes of the thyroid gland may also be made to diminish by it. It is probable that the nitrate of silver has no particular virtues beyond those of a severe counter-irritant, and might, were it wished, be substituted by other remedies, as, for instance, a caustic solution of iodine. It is, however, a very convenient, manageable, and efficient means, which there is no motive for wishing changed. The substitution of nitric ether as a menstruum, instead of water, would be a great improvement. (See 'Medical Times and Gazette,' for Oct. 14, 1854, p. 394.)—*Med. Times and Gazette, Oct.* 28, 1854, *p.* 444.

DISEASES OF THE EYE.

100.—THE OPHTHALMOSCOPE.

By Dr. E. Williams, Cincinnati.

[The following remarks by Dr. Williams are forwarded to the 'Medical Times and Gazette,' by Mr. Dixon of Green-street, who seems to have improved the apparatus by placing the reflecting mirrors in a spectacle-frame, so as to leave the hand at liberty. Mr. Dixon says:]

It has occurred to me, therefore, to fix into a spectacle-frame, to be worn by the observer, a pair of reflecting mirrors, differing from those employed by Coccius and Anagnostakis only in being of less diameter, and having a smaller central hole. By this contrivance both hands of the observer are left at liberty, and he is enabled, with-

out assistance, to command the movements of the patient's lids with one hand, while with the other he uses the magnifying glass.

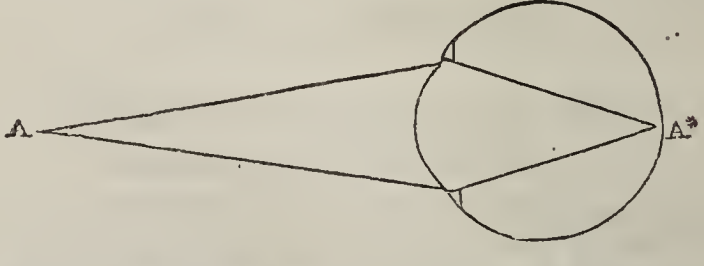
The focus of the mirrors should nearly correspond to the distance at which the observer's unassisted eye can ordinarily define minute objects. I think it better to place the lamp immediately behind the patient, rather than by his side, and at such a height that the rays of light just clear the top of his head. The observer, in making his examinations, will find it best to use only one of his eyes at a time; but two mirrors are desirable, as they balance each other in the frame. Where a less concentrated light is preferred, plane glasses, silvered at the back, may be used instead of concave mirrors; a small round portion of the silvering being removed from the centre for the observer to look through.

[By this means a strong light can be reflected into the eye, and its interior can be minutely examined.

Dr. Williams proceeds first to describe the principle of the construction of the apparatus:]

Principle upon which the Construction of the Ophthalmoscope is Founded.—The pigmentary layer of the choroid is not sufficient to account for the black appearance of the bottom of the eye as seen through the pupil. The pigment would, indeed, absorb all the rays of light that enter the eye, were there no tissues situated anteriorly to it, capable of reflecting a portion of the rays. The vessels of the retina, and the optic nerve at its point of entrance, must certainly have this power. Besides this, however transparent the retina may be supposed to be during life, a membrane so brilliant must necessarily reflect a large number of the luminous rays that fall upon it.

Why, then, does the Pupil ordinarily appear Black?—It is only in the refracting properties of the eye that the explanation of this phenomenon must be sought. Let us suppose that the eye to be examined looks at a luminous point A. The rays projected into the eye from



this point, being refracted, will be concentrated at the point A* of the retina, and reflected, in their turn, by this membrane, they will again issue from the organ. But, since they must pass through the same media they had traversed on entering, they will undergo the same refraction, and be consequently collected at the point A from which they first departed, in order to form there the retinal image.

From this it follows, that we could see the retina of an individual

only when he looked attentively at our own eye, which, in that case, would be the luminous point. But it is clear, that the quantity of light which our own eye can project is too feeble to illuminate the bottom of the eye explored; and, in attempting to look into the interior of that eye by the aid of ordinary day-light, we only intercept with our head the rays which should illuminate the cavity. Placed in this manner, in the shade, the pupil will naturally appear black.

After these considerations, it is easy to comprehend the object to be kept in view in using the ophthalmoscope. It is to throw into the eye, indirectly, a large quantity of light, in such a way that the observer, without intercepting the rays which enter, may receive directly into his own eye those reflected from the retina of the explored organ. With this view, any mirror may be employed, provided it be held obliquely with respect to the eye examined, and have a transparent spot, or a round hole, through which the observer may look.

Construction of the Instrument.—To Helmholtz, Professor of Physiology at Konigsberg, is due the invention of the first ophthalmoscope. The limits of my paper forbid a detailed description of his instrument. It is only necessary to add, that this ophthalmoscope, with all the modifications to which it has been subjected, has but very imperfectly fulfilled the desired end; since not only the illumination which it affords is insufficient, but its complexity also renders it extremely difficult of application. My present object is, simply to describe the instrument of Dr. Anagnostakis, of which an account will be found in his original and admirable monograph above cited. Combining, as it does, the entire advantages of all the complicated and expensive ophthalmoscopes heretofore invented with the utmost degree of simplicity, facility of application, and portability, it will, without doubt, wholly supersede them. It is now exclusively used in France and Belgium, and the results of its application have been so satisfactory as to leave little else to be desired.

The instrument is composed of a small, round, concave mirror, about two inches in diameter, with a focal distance of four and a-half inches; the silvered surface being accurately adapted to a plate of blackened copper. The centre of this little mirror is perforated by a small hole about three lines in diameter. Around the border of the glass and plate thus adapted is placed a brass rim, to which is attached a small handle of wood or ivory.

Method of Using the Ophthalmoscope.—The pupil of the eye to be examined, if not already very large and fixed, should be previously dilated with atropine or belladonna. A dark room is selected; on a level with the patient's eye a bright lamp is placed upon a table as near as possible to the patient, who is seated beside it. The observer is seated on a chair close in front of him, so that their eyes shall be upon the same level, and holds the mirror with the reflecting surface directed in such a manner that the rays reflected from the lamp are thrown upon the eye to be examined. Then, applying his eye against

the central hole, the observer looks through it into the bottom of the eye thus illuminated; and, still holding the instrument constantly and steadily against his eye, he approaches towards or recedes from the patient till the reflection becomes small, brilliant, and oblong in form, and the tissues at the bottom of the globe are recognized. If it is desirable to magnify the image of these parts, or if, in consequence of the extreme presbyopia of the patient, the observer is obliged to place himself at a great distance in order to see the deep tissues of the eye, a convex lens, of suitable magnifying power must be used. Accordingly as the refracting power of the eye examined is greater or less, so must the eye of the surgeon be brought nearer to or removed further from the patient, in order to have a clear image. But to secure, at the same time, a sufficient illumination, the focus of conjunction of the mirror must fall upon the cornea of the eye observed. Since, however, this focus, in a concave mirror, varies with the distance of the light from the mirror, by altering that distance, the focus may be lengthened or shortened at pleasure. Thus the instrument may be adapted to all eyes indiscriminately, whether myopic or presbyopic.

These are the general rules to be observed, and a little practice will give the surgeon that facility in the use of the instrument necessary to accurate observation.

A few words with regard to the appearances presented by the healthy eye are necessary to enable the reader to appreciate the pathological changes which the ophthalmoscope reveals.

On first looking, as above directed, into an eye free from disease, the pupil is seen of a reddish colour, but none of the deeper structures are distinguished. As the parts at the bottom of the eye are necessarily seen through a refracting medium, which varies in degree in different individuals, it is evident that the surgeon must approach towards or recede from the eye inspected, till the proper focus is found; he will then see red vessels traversing the bottom of the organ. When these blood-vessels are distinctly recognised, it is certain that the proper focal distance is attained, and the retina is in view.

This point, once gained, should be steadily preserved, while the patient is directed to turn his eye-ball in different directions; thus all the parts of the retina are successively brought into the field of vision. When the globe is turned upwards and inwards, a spot, usually circular, is seen, much whiter than the surrounding parts, with a small umbilicated indentation in the centre, through which pass four blood-vessels, (two directed upwards, and two downwards), which branch off to the different parts of the membrane. But very frequently these principal trunks divide before entering the globe, and then a larger number of vessels are seen coming in at the white spot formed by the entrance of the optic nerve. Except this patch, which is quite white, the rest of the retina presents a reddish colour, which becomes more decided towards the periphery.

I must now speak of the pathological changes which have been already revealed by the aid of the ophthalmoscope. I shall adopt the natural order of noticing, first, the lesions that have their seat in the crystalline lens and vitreous humour; secondly, those confined to the essential organ of vision, the retina.

I imagine that no opacity of the lens, however slight, can escape detection by the use of this instrument. Certain it is that opacities which even materially interfered with vision, but which escaped the scrutiny of the most experienced eye, have been readily detected by a resort to the ophthalmoscope. Some very eminent oculists have reported cases of this kind. I have seen, at the clinic of M. Desmarres, beautiful opaque streaks in two lenses, which had eluded all other means of examination. When seen by the aid of this instrument, opacities of the crystalline appear as greyish-brown patches or streaks, of various sizes and shapes, upon a reddish back-ground, afforded by the illuminated retina. The importance, as to treatment and prognosis, of distinguishing the very commencement of cataract from impairment of vision produced by other more serious lesions of the vitreous or of the retina itself, is too obvious to need illustration. Who that has had even a limited experience in diseases of the eye, has not seen patients, with incipient cataract, tortured for months or years with leeches, cupping, blistering, and a thousand pernicious drugs, under the supposition of a commencing amaurosis? And who has not been consulted by patients sent to be operated upon for cataract, in whom the lens was perfectly transparent?

The most common alteration of the vitreous humour is the appearance in its substance of deep brown or greyish corpuscles, in greater or less abundance. These bodies are of very various sizes and shapes. Sometimes we see only two or three large irregular flakes, either floating separately in the liquid vitreous humour, or united to each other by a number of small filaments, At other times an immense number of smaller corpuscles, some angular, others in the form of shreds, and others, again, resembling pieces of membrane with ragged edges. When agitated by the sudden movements of the globe, these floating bodies are seen bounding and darting about in the interior of the eye, and gradually subsiding towards the inferior part when the organ is at rest.

Whether these substances are inflammatory exudations from the ciliary body, retina, or choroid, that have become detached; whether they are the remains of blood effused into the cavity of the eye; or, as is more probable, attributable sometimes to one and sometimes to the other of these sources, is not yet settled. Future observations can alone decide that question. Since, in all cases where these corpuscles exist, the vitreous humour is disorganised and liquid, I have thought that some of them might be opaque and thickened portions or shreds of hyaloid membrane.

Doubtless many cases of muscæ volitantes are produced by these

little bodies floating before the retina. As, however, they are not unfrequently seen in patients who are not at all troubled with muscæ, and are absent in others where this phenomenon is complained of, they cannot be considered as its sole cause. If small, and occupying the anterior segment of the vitreous body, they may throw no shade upon the retina, and hence not interfere in the slightest degree with vision. But when of large size, and situated in the posterior segment, near the retina, they must necessarily derange the sight by mechanically intercepting the rays of light.—*Med. Times and Gazette, July* 1, 1854, *p.* 7.

101.—ON ULCERS OF THE CORNEA.

By George Critchett, Esq., Surgeon to the Royal London Ophthalmic Hospital.

In cases of acute and spreading ulcers, where penetration of the cornea is threatened, it becomes a matter of extreme importance to determine whether there is any means of arresting the progress of the ulceration. However judiciously the constitutional treatment may be conducted, there is every fear that penetration may occur before a favourable reaction has time to take place; it, therefore, is an anxious question, whether we can, by any local application, bring about an altered action in the part, and avert the impending danger. It is in such cases as these that I have found the nitrate of silver, in substance, of great value; it should be finely pointed, and carefully limited as much as possible to the ulcer itself; in order to effect this object, glycerine should be dropped into the eye previously, so as to protect the remainder of the surface from the action of the caustic. It seldom requires repeating more than once or twice, and it will frequently be found that the ulcer will begin to fill up and heal from that time. In other cases it must be admitted that the effect is less favourable—that it is productive of considerable pain, of increased inflammatory action, and of infiltration of matter between the corneal layers. This I have chiefly observed amongst the old and feeble; but the happy result that occurs in numerous cases, and the extreme urgency and threatening aspect of the symptoms, fully justify and even suggest the plan I am now advocating.

I have usually observed that these ulcers occupy a considerable area; and if we are unable to arrest their progress, and penetration occurs, the iris immediately falls forward, in contact with the opening, which gradually enlarging, allows of its protrusion, and thus "prolapsus irides" occurs; the natural resisting power and elasticity of the globe is weakened, the prolapse increases, the anterior surface of the eye bulges forward, and staphyloma occurs. It is very desirable, if possible, to obviate this latter result; and here, again, it has been suggested to apply the nitrate of silver, in substance, to the protruded part. The objection to this plan is, that it often causes severe pain,

and is by no means uniformly successful, and therefore I cannot recommend it. I much prefer either puncturing the prolapse with a needle, which often causes it to contract and shrivel away, and thus to close up the corneal opening; or in case that fail, and the protrusion still increases, to remove it entirely. Under the most favourable circumstances, when disease has produced such results, the integrity of the organ is seriously compromised; but it is quite possible that sufficient space may be preserved for the formation of an artificial pupil, and under any circumstances, it is most desirable to prevent the occurrence of a large staphylomatous protrusion.—*Lancet, July* 15, 1854, *p.* 23.

102.—ON VASCULAR OPACITY OF THE CORNEA.

By George Crichett, Esq.

[Independent of the immediate effects of catarrhal and purulent ophthalmia there are remote changes which are exceedingly troublesome,—amongst these we may mention vascular opacity of the cornea. Mr. Critchett gives us some good remarks on the subject. He says:]

Some of the most marked and obstinate forms of this disease that have come under my care at the Ophthalmic Hospital have occurred in men who have served in the Indian army, where the original disease is probably due to atmospheric influence, and where we find that all diseases of mucous membranes are severe, intractable, and prone to lapse into this hypertrophied state, and so to continue for an indefinite period. I have never observed this condition in infants even after the most acute purulent ophthalmia. As may readily be imagined, the existence of even a thin vascular layer over the surface of the cornea very seriously interrupts vision, and the worst cases only allow perception of light, and a dim outline of objects, and it becomes an anxious question to what extent the brilliancy of the cornea can be restored by suitable treatment. In forming a judgment upon this point, what we have especially to notice is the direction of the vessels—whether they creep down from above only, or whether they encroach from all sides—as upon this circumstance depends the fact as to whether the vascular opacity is entirely due to the granular condition, or to some inherent vice in the conjunctiva and cornea, and in the general state of system. If we can satisfy ourselves that the disease is purely local, and due to the mechanical change of the conjunctiva, we are justified in giving a favourable opinion as to the result. Our treatment must be exclusively directed to the removal of the granular condition. If we can succeed in this, the subsequent vascularity, which is a consequence of it, spontaneously subsides, and leaves a clear cornea. Various plans have been suggested for their removal. Thus, excision by means of curved scissors has been recommended. It has, however, this serious objection, that if it be only partially and super-

ficially done, it has the effect of pruning, the granulations are reproduced, and usually to a greater extent, or, if they are deeply and thoroughly removed, they leave an irritating, irregular cicatrix, that keeps up the disease of the cornea, and may cause entropium, and is worse than the original condition, since it is irremediable. Frequent scarification has been suggested, and is now sometimes had recourse to. My own experience is unfavourable to it, and I have seen cases where it has been employed by other surgeons for many months without advantage, and it seems improbable that a slight and temporary unloading of the vessels, by small punctures or cuts, should remove, or even diminish, these growths; they irritate but do not cure. The treatment that is most uniformly recommended, and that which I have found the most valuable, is the application of some powerful astringent or stimulant to the surface of the enlarged villi. This should be done by everting the upper lid, and applying the remedy freely over the surface. The principal stimuli for this purpose are the solid nitrate of silver, or a strong solution; the sulphate of copper; the acetate of lead, alum, zinc, &c. In the selection of a stimulus, attention must be paid to the condition of the granulations, their size, amount of organization, nervous sensibility, and the time they have existed. In the more recent cases, where they are small, round, vascular, and sensitive, the stimulus must be mild, as, for instance, a solution of the nitrate of silver or the sulphate of copper, about ten grains to the ounce of distilled water; in the large, pale, insensible forms, the solid nitrate of silver may be freely and frequently applied. As a general rule, and in an average case, my own experience leads me to prefer the sulphate of copper to any other application; it may be rubbed freely over the surface, and repeated either daily or every other day, according to the effect produced; it is far less painful and irritating than the nitrate of silver, and except in very indolent cases produces a sufficient effect. Recently, the acetate of lead, in powder, has been much recommended. I have tried it in some cases. It appears to incorporate itself with the tissue, and by degrees forms a sort of permanent enamel over the surface. I have not been able to trace any favourable effect in diminishing the villi, but I have no doubt it renders them less irritating to the corneal surface, and may be conveniently and advantageously employed when other means of acting upon them have been exhausted. I have no doubt the ointment recommended by Mr. Guthrie is very useful in these cases. Whatever caustic or astringent is selected, it is desirable to limit its effect as much as possible to the part to which it is applied, and to protect the rest of the conjunctival surface. This is more particularly necessary when the nitrate of silver is employed in substance. The best mode of effecting this object is to put a little glycerine into the eye previous to applying the caustic, and also to keep the eyelid everted for some little time after the application. Although caustics and powerful astringents are the only reliable means in these cases, it is only when applied carefully to the

part, and at stated intervals, that they are of service. Used in weak solutions, as drops or lotions, I have often observed them to do harm by irritating the eye, without acting on the disease.

In undertaking a case of this kind, it is important that the patient should be made aware that, under the most favourable circumstances, and with the most judicious management, the process of treatment must be tedious, extending over many months, and requiring great perseverance in the use of remedies. If the disease be limited to the upper half or even two-thirds of the cornea, and if the vessels can be all traced from above, you may depend upon a cure, provided the plan I have recommended be judiciously carried out. The first result is the diminution of the villi, until by degrees the conjunctiva becomes nearly even and smooth.—*Lancet, June* 10, 1854, *p.* 611.

103.—*On Cold as an Anæsthetic in Operations on the Eye.* By George Critchett, Esq.—[The following operation for cataract under the local influence of cold is interesting.]

Some pounded ice was put into a bladder, mixed with salt, and placed over the right eye, temple, cheek, and brow, and kept there for about twenty minutes. At the end of that time, all sensation being lost, I made a rapid section of the cornea, which was immediately followed by the cataract and some portion of vitreous humour. Some slight hemorrhage occurred, but slowly, and not to an extent beyond half an ounce. As sensation returned, our patient complained of extreme soreness and discomfort about the eye, and some of the old pains, taking the course of the fifth pair of nerves, came on. All this, however, speedily subsided, and we had the satisfaction of seeing him in a few days quite free from pain, the section of the cornea gradually approximating, and with every prospect of a speedy and complete recovery, without fear of relapse, now that the cause of all the suffering was removed.

It seems to me that the application of cold fulfilled, in this case, all the indications that were desired, and from the slight hemorrhage that occurred, and from my previous experience of somewhat similar cases, I am of opinion that if the operation had been performed without local anæsthesia, there would have been very severe pain at the time, extensive bleeding, consequent painful distension of the globe, and a tedious recovery.—*Lancet, Sept.* 23, 1854, *p.* 258.

104.—*Coniin as an Application in Scrofulous Intolerance of Light.* By Professor Mauthner.—The author employed with great effect the following preparation in the non-inflammatory blepharospasm of scrofulous children:—Coniin gr. ss., olei amygd. dulc. ʒj. Mix, to form a thick fluid, with which the lids may be daily pencilled.

In eight, or at most fourteen days, this troublesome condition ceases. Hard glandular swellings of the neck bear this remedy better than salves composed of iodine.—*Journ. f. Kinderkr.*, 1, 2, 1854.—*Medical Times and Gazette, Aug.* 12, 1854, *p.* 169.

105.—*Treatment of Tinea Tarsi.*—The treatment which is the favourite at the Moorfields Royal Ophthalmic Hospital in this troublesome disease consists in carefully taking away all scales and crusts, and then rubbing the edge of the lid with solid lunar caustic. The application must be repeated twice a-week, and patiently continued, It is absolutely necessary that all deposit be cleared away, so as to allow the remedy to come in direct contact with the cuticle, the opening of the hair follicles, orifices of the Meibomean glands, &c. If the treatment be steadily persevered with, the redness subsides, the thickening of the lid is removed, and the hairs previously destroyed grow again. Mr. Critchett is accustomed to relate a case in which a fair set of eyelashes were reproduced, after they had been absent for many years. The disease appears to be much more frequently secondary to measles than to any other affection, and its subjects are generally more or less cachectic. It often varies remarkably with the condition of the patient's health. Tonics are, therefore, indicated, together with a liberal diet ; but it is well proved, that these, without local treatment, are not competent to cure the disease. At the Hospital for Skin Diseases, in several cases recently, the hairs and their bulbs have been examined with the microscope. It does not appear that any cryptogamic sporules are ever present, the structure of the hair being healthy. In pulling out an eyelash, the hair-sheath is generally brought away too, and on its exterior are numerous pus and exudation-cells, showing that the inflammatory action has been external to the hair-sheath. In this respect, the hairs resemble those of sycosis and of impetigo occurring on hairy parts of the face. Mr. Startin's treatment consists in smearing the edge of the lid every night with a mild mercurial ointment, (ammonio-chloride, 10 grains to the ounce,) and administering an arsenical tonic in combination either with iodine or mercury.—*Med. Times and Gaz. Oct.* 28, 1854, *p.* 444.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

106.—ON THE PELVIC ARTICULATIONS IN THE MECHANISM OF PARTURITION.

By Dr. J. M. Duncan, Edinburgh.

[It is known that in the guinea pig there takes place at the time of parturition a very considerable separation of the pubic bones. In the cow these changes differ in some important respects.]

They consist in an increased development of the large sacro-sciatic ligaments, which, from being of moderate thickness, and in a state of tension in the non-pregnant cow, become much increased not only in thickness, but also in length, and are thus made slack and yielding. The tension of these ligaments tends to fix the sacrum and consolidate it with the ilia, and their relaxation leaves it freer to move. Further to facilitate this motion, the sacro-iliac joints, which in the non-pregnant cow are described by Mr. Barlow as secured by a material closely resembling intervertebral substance, now have the opposing bony surfaces smooth and lubricated, and the surrounding fibrous ligaments relaxed. By these changes the ilia become extensively movable upon the sacrum (or *vice versâ*), in an antero-posterior direction, the motions being analogous to those of flexion and extension in the limbs. The final result of these changes and motions is to enlarge the genital passages in this animal.

It has hitherto been customary to regard the articulations of the pelvis in man as virtually immovable, and to describe in the female at the time of parturition cases where motion evidently takes place as morbid in their character. But Mr. Zaglas has lately pointed out that in man there is distinct motion of the ossa innominata in an antero-posterior direction, or upon an imaginary line passing transversely through the second sacral vertebra from one side to the other. In other words, the sacrum may be described as having a nutatory motion upon this imaginary transverse axis, the promontory of the sacrum advancing downwards and forwards, while its apex moves in a contrary direction, and *vice versâ*. In the downward motion of the promontory, which in the non-pregnant is to the extent of about a line, the brim of the pelvis is diminished to the same extent in its conjugate diameter, while the corresponding upward motion of the apex of the bone to the extent of about two lines puts the sacro-sciatic ligaments on the stretch, and enlarges the dimensions of the

outlet. By observations on the living and on the dead subject, Mr. Zaglas has shown that in the erect position the sacral promontory is not in the position of greatest projection into the brim of the pelvis, but the reverse, and consequently that the apex is in its forward position diminishing the outlet, and relaxing the sacro-sciatic ligaments. When the body is bent forward, on the other hand, the base of the sacrum is protruded into the brim, the apex is tilted upwards, the sacro-sciatic ligaments put on the stretch, and the outlet of the pelvis consequently enlarged. These movements take place ordinarily in both man and woman, but in her they are of greatest interest and importance in the function of parturition. Before entering on this part of the subject, I shall first point out some peculiarities in the pelvic articulations in woman, and describe the changes taking place in them in the end of pregnancy.

The three large pelvic articulations present the following important peculiarities in regard to their mode of union:—Each articulating surface of bone presents two distinct parts; the one, comparatively smooth, covered with cartilage and only partially united to its neighbour; the other, rough for the attachment of very strong and numerous bands of fibrous and fibro-cartilaginous tissue firmly uniting it to the corresponding surface of its neighbour. The former surfaces form the anterior and inferior parts of the sacro-iliac joints, and in the skeleton are known as the auricular surfaces. In the symphysis pubis these surfaces form the superior and posterior parts of the joint. Interposed between the investing cartilages at these parts is a synovial bursa. It is on these surfaces that the articular motion is most free, the ulterior advantages of which, in the physiology of the erect position, &c., this is not the place to demonstrate.

Mr. Zaglas points out that on the os innominatum we may divide the entire articular surfaces into four parts. The two antero-inferior of these correspond with what is called the auricular surface, and are inclined to one another at an angle which looks outwards and forms a ridge inwards. The two posterior superior surfaces (which are separated by a large mass of fibrous ligamentous tissue from the corresponding surface of the sacrum) are inclined to one another at a similar angle; and there is accordingly a crooked ridge running between the four surfaces in a direction from the spine to the symphysis. Taking the four surfaces, however, in another relation, it may be seen that the two posterior superior surfaces are separated from the two anterior inferior by a groove (running nearly parallel with the axis of the sacrum), and are inclined to them at an angle which looks inwards. The consequence of this arrangement is, that while some motion is permitted, any tendency to displacement is entirely obviated, so long as the innominate bones are retained in a due degree of proximity by the pressure on the acetabula, and by their ligaments. But besides these just remarks on the general arrangement of the whole joint, it is important to notice another striking peculiarity always observed, and

frequently in a very marked degree. This consists in the existence upon the posterior articular surface of the ilium of a bony prominence of irregular outlines, but frequently assuming the form of a solid projecting angle. This projection is found to correspond to a distinct cavity on the opposed surface of the sacrum, which is, in some of its functions, analogous to a cotyloid cavity. For, upon these parts (which are generally on a level with the upper part of the second bone of the sacrum) the motions of the ilia must take place; and whilst they will offer no absolute resistance to the motions of the ilia upon the sacrum analogous to flexion and extension in the limbs, they will, like the general arrangement of the entire articular surfaces of the articulation, prevent the slipping upwards or downwards of the one bone upon the other, motions which would necessarily prejudice the security of the erect position.

In the latter half of pregnancy the soft tissues contributing to form the pelvic joints are invariably, or almost invariably, found softened as if by serous infiltration; and the joints are consequently relaxed. All anatomists and obstetricians, who have paid attention to this subject, agree in this statement. The softening of these tissues is generally accompanied by their increase in thickness, a change which will in itself have, as a necessary consequence, the separation of the bones, and the enlargement of the pelvic circle. And I have no doubt that this favourable circumstance, together with others connected with the motions of the joints to be presently discussed, forms an important part of the explanation of some cases of delivery, by a simpler operative procedure than was predicted to be necessary. Indeed, the experiments of MM. Giraud et Ansiaux seemed to them to show that in contracted pelves this change in the joints takes place to a greater extent than in well-formed pelves. In some cases the thickening of the tissues goes on to quite an extraordinary extent. Boyer states that in one case he found the sacro-iliac joint separated to the extent of half an inch; Chaussier found the symphysis pubis separated still more in an easy labour, and Madame Boivin asserts that she sometimes found the pubic bones separated to the extent even of an inch. In some cases, as in those of Smellie, Diemerbroek, and Denman, the separation appears to have taken place chiefly during the course of a difficult labour.

But although there can be no doubt as to the thickening and softening of the tissues forming the pelvic joints, there is great difference as to their capability of motion. In this country, indeed, most authors seem to think that motion in these joints in pregnancy is always to be considered the result of a morbid process. This opinion is, without doubt, erroneous, although there are observed not unfrequently cases where the natural relaxation of these joints increases to such an extent as to interfere with the function of progression.

The observations which I have already made upon the movements in the pelvic joints in the non-pregnant set aside at once all the argu-

ments adduced to show that there is naturally no such mobility in pregnancy, and that when movements are observed in these joints a morbid condition exists. Founding upon what has just been stated as to the condition of the ligaments of the pelvic articulations in the latter part of pregnancy, we can, without difficulty, assert that at that time the pelvic bones enjoy freer and more extensive movements than at other times. In very numerous cases scattered through obstetric literature, where these joints have been examined after delivery, authors have described the mobility of these articulations, sometimes, indeed, as being to a very great extent. In addition, cases are not very unfrequent where these movements, either from their freedom and extent, or from their causing pain, attract the attention of the patient and physician. They are then sometimes easily perceived on making the proper examinations.

The movements which occur may be described as consisting in the elevation and depression of the symphysis pubis, the ilia moving upon the sacrum: or if the sacrum be regarded as the moving bone, it describes a rotatory motion upon an imaginary transverse line passing through the second bone. By the elevation of the symphysis pubis (or nodding forwards of the promontory), the angle of inclination of the pelvis is lessened, and the conjugate diameter of the brim of the pelvis is diminished to the extent of one or even two lines; the corresponding diameter also of the outlet is increased probably about twice as much. This different ratio of the effects of the motion upon the brim and outlet results from the fact of the centre of motion being much nearer the promontory than the apex of the bone. The promontory, therefore, will describe an arc of a smaller circle than the apex.

That the alteration of the dimensions of the brim and outlet by these movements is not insignificant, but the reverse, is a proposition which every obstetrician will confirm. It only remains, then, to be observed how these alterations correspond with the phenomena of the progress of the child in parturition. Now it has been already stated, that in the erect position the brim of the pelvis is in its enlarged condition, the symphysis pubis being then depressed, while the outlet is correspondingly contracted. Now in the course of the first stage of labour, while the head is pressing into the brim, the human female is generally standing, sitting, or lying on her back, or in an easy position. But as soon as the head has descended into the pelvis and impinged upon the sensitive vagina, then forcing efforts accompany the pains. These forcing efforts consist, in great part, of powerful contractions of the anterior abdominal muscles, the effect of which, especially the action of the two recti muscles, will be to tilt up the symphysis pubis, thus throwing the promontory forwards, contracting the brim, and enlarging the outlet, and diminishing the angle of inclination of the pelvis. To all these changes the position usually assumed by the female in the second stage of labour will contribute. For it has already been stated, that the simple bending of the body

forwards has for its effect the tilting upwards of the apex of the sacrum and enlarging of the outlet. And it is a curious fact, that a woman in her forcing pains, in the second stage, is found to draw up her legs and bend her body forwards, thus inducing changes in her pelvis which facilitate the advance of the child in that stage.

The motions of the pelvic bones, which we have been detailing, agree exactly with those that take place in the cow in parturition. In that animal the first effect of each pain is to elevate the tail, and thus enlarge the outlet for the escape of the calf.

The mechanism we have just been describing in the human female is analogous to that which we have previously shown to occur in the pregnant and parturient cow. The changes which occur at the time of labour in the guinea pig find their analogues in the altered conditions of the symphysis pubis in the human female. But in her they are only to a small degree comparatively. It is important, however, to remember, that in this joint the thickening of the ligaments is generally more apparent than in the sacro-iliac joints. The distension of the pubic ligaments will be easier in the recumbent than in the erect attitude, which last implies strong compression of the tissues of the joint by the pubic bones. Moreover, the separation of the thighs, which is habitually practised at the latter part of a labour, will favour any possible slight separation of the pubic bones, especially if the internal femoral muscles are in a state of contraction while the thighs are apart. Indeed, the study of the whole subject illustrates beautifully how nature leads the human female in the act of childbirth to assume positions and make exertions which are necessary for perfecting the mechanism of the process.

There is another source of information as to the state of the pelvic joints, especially the sacro-iliac, namely, the results of section of the symphysis pubis, an operation which appears to me to have been prematurely abandoned. In the performance of this operation upon the living female in order to aid in delivery, it has been found that the pubic bones can be separated to the extent of from one and a half to two or even three inches, without any damage to the sacro-iliac joint, or with the result of merely lacerating the capsular fibres of the anterior part of the articulation. In many of the cases the pubic bones, after the division of the symphysis, seemed to part from one another with resiliency, as if their union counteracted some force tending to separate them. This phenomenon admits of two explanations; either by attributing it to the weight of the limbs acting upon the acetabula, or by ascribing it to the elasticity of the great mass of elastic fibrous tissue in the posterior and upper parts of the sacro-iliac articulation, which is not resisted by the different mode of union in the anterior and lower part of the joint as already described. In the pelvis of the male and non-pregnant female, when this operation is performed after death, it is found that a separation of from one, in some cases, to even two inches, can be effected without injury. These facts illustrate the

relaxation of the sacro-iliac joints at the end of pregnancy. They are, however, perhaps of more importance in regard to symphyseotomy, as showing the amount of separation that may be produced without injury. But the dread of injury is probably, in the main, a groundless fancy; for we know that to destroy the sacro-iliac joint, after section of the symphysis pubis, it is necessary to use great force, a circumstance which is, in itself, the best guardian of the safety of the joint.

The operation of symphyseotomy, as reintroduced to the profession in 1768 by MM. Sigault and Le Roy, is one which has, with justice, been condemned. But the jealousy of the Academy of Surgery, which discountenanced M. Sigault's operation at the first, led the members, after the subsidence of the excitement produced by its first and only occasional successes, to repeat their condemnations of it, and prevented it obtaining a fair consideration. It yet remains to be seen whether the operation, as more broadly proposed, long before Sigault, by Severin Pineau, may not be one which is destined to have a small place among the operations of practical midwifery, devoted to saving the life of the unborn child. In this country the operation received, after its proposal by Sigault and Le Roy, the high sanction of W. Hunter and Denman, so far as its own peculiarities were concerned. But they, at the same time, showed that it could be of very little, if any, service, in the cases for which it was proposed, namely, those of extreme pelvic distortion where Cæsarean section would otherwise be required. In this condition matters have been allowed to rest. British obstetric authors have loaded the operation itself with calumnies which are quite unfounded, and raised difficulties about it which are sufficient to deter a superficial inquirer from its consideration.

There is every reason to believe that the operation, in itself, is one of slight danger at the time, or even ulteriorly, if compared with the dreadful results of craniotomy and Cæsarian section. For the latter operation it can very seldom be a substitute. But it remains to be seen whether the former, namely craniotomy, may not in some cases be superseded by it. There is every reason to think that the operation would be much less dangerous to the mother than craniotomy, even with the allowance of great freedom in the selection of cases; and it would give a chance of saving the child, whose life is necessarily compromised by that proceeding. Moreover the operation might probably be simplified by adapting to it the subcutaneous method.

I conclude these remarks with the following quotation from the most esteemed author in British obstetrics, whose name and influence have contributed greatly to the neglect into which the operation has fallen:—

"It is proved," he says, "in the first place, that some enlargement of the capacity of the pelvis is actually obtained by dividing the symphysis of the ossa pubis.

"Secondly, that the evils which have followed this operation have

been very much occasioned by its being performed unskilfully, or by injudicious endeavours to increase that enlargement of the capacity of the pelvis beyond the degree which naturally follows the division of the symphysis.

"Thirdly, that many women who have undergone this operation have recovered; though of those who recovered, many suffered very serious complaints for a long time, or for the remainder of their lives.

"Fourthly, that some children were born living when this operation was performed.

"We may, therefore, presume to say that if a case could be so precisely marked that there should only be a deficiency of just so much space as would be supplied by the simple division of the symphysis, the operation might in that particular case be considered.

"We may also say, that this operation is not so certainly fatal to those women on whom it may be performed as the Cæsarean operation; nor so certainly destructive of children as that of lessening the head.

"We may, then, be allowed to suppose a case, and such a one is more than possible, in which a person of very high rank, the life of whose child might be of the greatest public importance, could not be delivered without the destruction of the child, or her child be preserved but by the Cæsarean operation at the expense or great hazard of her life; and that she, through human frailty, might refuse to submit to the Cæsarean operation, yet the great interests and policy of the nation might forbid the destruction of the child. Of course both the mother and child would be inevitably lost. Should such a case occur, which, as said before, is more than possible, then the section of the symphysis of the ossa pubis might be proposed and performed, as it would in some measure meet both these interests; being less horrid to the woman than the Cæsarean operation, and, instead of adding to the danger, give some chance of preserving the life of the child."

This testimonial from the eminent and sagacious Dr. Denman is the more extraordinary, as he is an author who joins strongly in the cry against the operation, and expressly says, in regard to the above passage quoted from his own work on Midwifery, that he does not "mean to insinuate a wish or advance an argument in favour of this operation, in the cases for which it was originally proposed, or any other which can be imagined."

The last paragraph of the passage just quoted gives in few words a general notion of the cases to which this operation may yet be adapted. But it must be remembered that, in our day, a section of this class of cases has already been provided with a suitable treatment in the operation of premature labour; an operation, however, whose use is not inconsistent with the simultaneous use of symphyseotomy.—*Dublin Quarterly Journal of Med. Science, Aug.*, 1854, *p.* 60.

107.—ON THE INDUCTION OF PREMATURE LABOUR.

By Dr. John Rose Cormack, F.R.S.E.

The recent advocacy of certain new methods of bringing on labour suggest a few remarks upon this important subject.

Premature labour may be induced with more or less certainty by the following methods, when employed either singly or in suitable combinations with each other.

1. Puncturing the membranes.
2. Detaching the decidua from the internal surface of the cervix uteri.
3. Dilatation of the os and cervix by sponge tents.
4. The uterine douche.
5. Galvanism.
6. Administration by the mouth and anus of medicinal stimulants of the uterus.
7. Topical excitation of the mammæ.

The five first mentioned, and in particular the third and fourth proceedings, are those which are most to be relied on. The other methods enumerated may occasionally be taken advantage of as adjuvants.

1. *Puncturing the Membranes.*—This operation is often performed in the following manner. The patient stands when the sac is being tapped, as in this position the uterus comes down more within the reach of the practitioner. A piece of pointed whalebone, a catheter armed with a stilette, or some such instrument, is then taken in the right hand and pushed cautiously upwards, resting upon the forefinger of the left hand till it is made to pierce the membranes. From the opening being made in a position which is central and dependent, no obstacle exists to retard the flow of the liquor amnii, which consequently soon drains off, and the unprotected fœtus is pressed down upon the unprepared, *i. e.*, upon the undilated cervix and os. This energetic uterine action occasions great pain to the mother, while she also incurs the risk of sustaining injury from bruising and laceration of the parts concerned in parturition. The life of the fœtus is likewise endangered by the severe pressure to which it is thus suddenly and rudely subjected. It is better therefore to puncture the membranes high up; which can be done by a male catheter, from the extremity of which a stilette can be pushed out when it has been carried up to the proper place. The convex aspect of the instrument must be towards the sacrum; and the position of the instrument ought to be between the posterior wall of the uterus and the product of conception, so that when the stilette is pushed out of its sheath it cannot come in contact with the uterus, but with the membranes. When the membranes are punctured high up, according to this plan, the uterine parietes form a partial plug, and in place of a rapid and unceasing flow of the liquor we have it coming away gradually, and with intermissions. Natural

labour is more closely imitated, for the membranes continue sufficiently distended to perform their office of a soft, insinuating, and powerful dilating wedge. From the moment of rupturing the membranes to the completion of labour, from thirty hours to some days may elapse. So long as progress is being made, it is wrong to hurry on the issue; but if, after the parts have become well dilated, the patient is impatient or exhausted, a turpentine enema or a dose of ergot may be administered with propriety. In certain very sluggish cases, with or without hemorrhage, it may even be necessary to supplement the operation of puncturing the membranes by using galvanism, or the douche. Such cases are not, however, of frequent occurrence.

These remarks are intended to apply to puncturing the membranes for the purpose of inducing labour. It need hardly be remarked, that there are circumstances in which the practitioner can both with facility and advantage expedite delivery by tearing the membranes with the nail of the forefinger.

2. *Detaching the Decidua from the Internal Surface of the Cervix Uteri.*—Premature labour may be induced by detaching the membranes, by means of a catheter, or some instrument of a similar form. The downward pressure of the unruptured sac becomes a useful wedge in dilating the os. Some practitioners prefer this method of proceeding to puncturing the membranes. It may sometimes be advantageously resorted to, especially when combined with the judicious exhibition of ergot of rye. The use of sponge-tents and the uterine douche are, however, to be generally preferred to instrumental detachment of the decidua.

3. *Dilatation of the Os and Cervix by Sponge-Tents.*—This is an excellent method of inducing labour; as by preserving the integrity of the membranes during the process of dilatation, we get the aid of their beautifully designed wedge-power, just as it is exerted in spontaneous labour at the full time. As Dr. Simpson remarks, the dilatation of the os uteri is in a great degree advanced, before the labour itself actually begins. It is to Kluge that we are indebted for the introduction of this plan of inducing labour. On the continent it has likewise been advocated by Stultz, P. Dubois, Chailly-Honoré, and others; while in this country its general adoption has been much promoted by the teaching of Professor Simpson, who uses it, not only as a means of inducing premature labour, but likewise as a means of dilatation for the purposes of diagnosis and treatment, in some affections of the os and cervix.

Dilatation by the sponge-tent, or *l'éponge préparée* of French authors,, is practised under several modifications.

The following description of the operation is translated from one of the latest and best French works on midwifery—the 'Traité Pratique de l'Art des Accouchements' (Edition 1853) of Dr. Chailly-Honoré of Paris.

"The patient is placed transversely at the edge of the bed, with her

pelvis resting upon a hard pillow, and her limbs supported by assistants. When the bladder and rectum have been emptied, and the state of the pelvis has been re-examined—not with the view of ascertaining the presentation, which would be of no use, and is generally impossible—the operator introduces a tubular speculum, in such a way as to get the cervix uteri in the centre of the hollow of the instrument. He then, by means of a plugging forceps (*pince à tamponnement*) insinuates a small cone of prepared sponge into the cervix. This cone ought to be about four *centimètres* (one inch and a half) in length, and one *centimètre* (two-fifths of an inch) at its base: it ought to be well lubricated, and to have attached to it a thread which can be distinguished (when hanging external to the passage) from the thread attached to the other sponge. This precaution enables the operator, when he proceeds to remove the sponges, to withdraw first that which has been last introduced. The second sponge ought to be sufficiently large to fill the vagina, and it ought like the other to have a thread attached to it by which it can be pulled. The second sponge is introduced above the thread of the first, and pushed up close to the os uteri, having been first soaked in tepid water, and then had the water squeezed out of it. The speculum is now gradually withdrawn, care being taken during the withdrawal to keep the sponges *in situ*, by pressing upon them with the point of the forceps. The operation having been thus completed, compresses and a T bandage are applied." (p. 256.)

The effects which follow these proceedings are thus described by the same author:—

"After some hours labour commences; the prepared sponge swells, in consequence of its imbibing the secretion of the cervix and the water retained in the second sponge. The expansion of the prepared sponge gradually dilates the cervix; and, by the irritation which it causes, it excites uterine contractions." (p. 256.)

Dr. Simpson recommends a pyramidal sponge-tent to be constructed with a perforation at its base, so that it may be temporarily fixed upon a curved wire or bougie whilst it is being introduced into the cervix; and he disputes the necessity of the second sponge. In July, 1844, addressing the Medico-Chirurgical Society of Edinburgh, he said that he had "found that the tent, when made and introduced in the mode already stated, required no vaginal plug, or other means to hold it *in situ*."

The time which elapses between the introduction of the conical sponge and the commencement of decided dilatation rarely exceeds twelve hours. When the subsequent progress is slow, successive doses of the ergot may be given with great advantage; or the membranes may be ruptured. Both of these measures are safer in the management of premature labour when the os and cervix have been previously dilated by the expanding sponge, than when they are used as initiatory measures.

From the time that the sponge-tent has been introduced the practi-

tioner ought not to be beyond call; because labour may set in very quickly; or unsuspected placental presentation may suddenly demand his presence. The importance of this caution is illustrated by a statement recently made by Mr. May, at the Reading Pathological Society, and reported in the 'Association Journal' for 18th February, 1854, (p. 145). He "mentioned the case of a lady whom he had attended in two labours, in which he had been obliged to perforate the head. During the third pregnancy, he advised the induction af premature labour. Without difficulty he introduced a sponge-tent into the os uteri. The next day he was summoned in great haste: there had been excessive hemorrhage, and the floor was deluged with blood. He proceeded to deliver; and then found a placental presentation. Without losing more blood, she almost instantly expired."

4. *The Uterine Douche.*—The uterine douche as a means of inducing premature labour seems to be differently understood and differently practised by those who have written in its favour. In fact, upon carefully examining what has been written on this subject, I find that there are three operations comprehended under the term *uterine douche*, which considerably differ from each other, both in theory and in practice.

First: Causing a stream of warm water to flow against the os uteri, at certain intervals of time.

Second: Causing alternate streams of warm and cold water to flow against the os uteri.

Third: Injecting water between the walls of the uterus and the membranes.

The first method belongs to Dr. Kiwisch, of Würzburg. His proceeding consists in allowing a stream of water at a temperature of 34 R., *i.e.*, 86 F., to flow against the os uteri, by means of a syphon. The following details are given in the 'N. Zeitschrift f. Geburtsk,' xxiv (1848), p. 153:—"He uses an apparatus consisting of a tin box of the capacity of ten cubic inches, which is fastened to the wall at an elevation of about nine feet, and is connected with a tube which reaches to the ground. The lower part of the tube is elastic, and has at its middle a stop-cock. The elastic part ends in a mouth-piece, which has the form of an uterine tube (*eines mutterrohres.*) The whole apparatus is intended to admit a continuous and powerful stream of water to the os uteri. The stream is allowed to flow for five minutes at intervals of six hours or longer until labour pains set in.

Dr. Shekleton, of Dublin, details a case ('Dub. Jour. of Med. Science,' *Retrospect*, xxvii, p. 214), in which he employed a modification of Dr. Kiwisch's method, which he thus describes:—"The apparatus employed was the common elastic bottle-syringe, manufactured by Robertson, of Dublin, and made use of in the Rotunda Hospital for injecting the vagina, uterus, and rectum with cold water, in cases of post-partum hemorrhage. Accordingly, upon the evening of the 9th, the first douche was applied in the following manner. She

was put upon her left side in the ordinary obstetric position; a large pan holding nearly two gallons was filled with tepid water, and placed upon a stool at a convenient distance from the bed; and another (a smaller one) was held so as to catch the water as it poured from the vagina, after having played against the os uteri. One person now introduced the bone-pipe at the end of the flexible tube, and with the index-finger guided the stream against the orifice of the uterus, which stream was forced onwards by another person, who held the bottle extremity of the apparatus in the large reservoir of water. The process was continued for about five minutes."

When the uterine douche is used after the method of Dr. Kiwisch, we presume the principal object is to cause the uterus to contract by exciting a reflex action, just as we accomplish the same object by means of galvanism. If the stream, however, be powerful, and if it be directed straight against the orifice, some of the water must undoubtedly enter the uterus; and in addition to the reflex action caused by the shock, we shall have the aid of mechanical distension of the os and cervix by a soft water-wedge, and also possibly a greater or less detachment of the membranes. The first method may therefore sometimes involve the third to a certain extent.

It is obvious that the various modifications of Dr. Kiwisch's apparatus, the vaginal douche of Dr. Simpson, or a common stomach pump, as suggested by Dr. Shekleton, may be employed according to the exigencies or inclination of the practitioner.

Dr. Kiwisch's uterine douche has been used pretty generally and very successfully for the last ten years in Germany, and it has more recently been employed in France, England, and other countries.

The second method belongs to Dr. Tyler Smith, of St. Mary's Hospital. It is a very rational modification of Dr. Kiwisch's douche. Dr. Smith remarks:—"Kiwisch recommends the use of warm water; but knowing from experience in cases of hemorrhage the increased efficacy of the alternation of hot and cold temperatures in causing uterine contraction, I determined to try the effect of alternating the hot and cold douche." The method of Dr. Smith seems to have answered very well in a case described by him in the 'Lancet' of 2nd October, 1852, and also in the hands of Mr. J. P. Lacy, who used it twice in the same individual. ('Lancet.' 4th December, 1852, and 22nd April, 1854.)

The third method, though it is obviously of older date, is generally connected with the name of Dr. Cohen, of Hamburgh. This physician published a paper in 1846, in the 'N. Zeitschrift f. Geburtskunde' (xxi, p. 117), on a new method of exciting premature labour. He says that for several years he had observed the effects of uterine injections in several experiments which he had instituted in the treatment of a lingering disease, and that he had in the course of these observations come to the conclusion that such injections must be very efficacious in inducing premature labour. In the same paper he relates a case in which he induced labour in six or seven hours. The patient recovered

without any bad symptoms. He used a common syringe with a metal tube attached, and he injected the water between the anterior wall of the uterus and the membranes. He used tar-water, not because he thought it of greater efficacy than simple water, but because he had used it to correct excessive uterine secretion in the experiments referred to.

The exact method of proceeding recommended and practised by Dr. Cohen, is thus described by him, in the 'N. Zeitschrift f. Geburt. xxi. (1846).

"To a common metal syringe, which will hold about from two to two and a half ounces of fluid, I screwed a tube of eight or nine inches long, and with a diameter of from one-sixth to one-eighth of an inch at the further end, with the curve of a female catheter. I cause the patient to lie flat on her back, with her buttocks raised by supports placed under; I then introduce two fingers as far as the posterior lip of the os uteri, and make the tube glide over these into the os uteri between the anterior wall of the uterus and the fœtal membranes; I depress the handle of the syringe, making the tube glide upwards over the os pubis: but I do not begin to expel the fluid from the syringe, until the end of the tube has entered about two inches into the os uteri, for which purpose it is necessary to proceed gently and slowly; I now raise the hand somewhat upwards, so that the orifice of the tube may not be obstructed against the walls of the uterus. I now slowly discharge the contents of the syringe. If I feel any obstruction, the mouth of the syringe lies against some soft structure, and the direction must be somewhat changed, until I perceive that the syringe is easily emptied; I then press down the piston slowly. In ten minutes the patient can go about again. At the end of six hours, I repeat the injection, unless signs of approaching parturition have shown themselves."

Dr. Leopold Harting, in reviewing the various methods of inducing premature labour, ('Monatsch. f. Geburts.' for 1853, vol. i,) though he does not mention Dr. Cohen's method of employing the uterine douche, seems to have repeatedly adopted it. He mentions seven cases in which he had used the uterine douche to induce labour. In the first four, he employed Dr. Kiwisch's method; in the last three, he inserted a tube within the os uteri for about an inch. In the first four cases, pains came on in from two and a half to fourteen days; and parturition occurred in from three to fifteen days. In the three cases in which the injection was thrown into the uterus, the first pain came on in from one and a half to three days, and the birth took place in from two to three days.

In the 'Deutsche Klinik' of the present year (January 14, &c.,) Dr. L. Steitz, of Hamburgh, refers to Dr. Harting's operation as "nothing but Cohen's plan, somewhat changed, but not improved." The same fact appears to have been pointed out by Professor Hohl, in No. 22 and by Dr. Sack, in No. 40 of the above periodical for the year 1853.

Dr. Steitz relates ten cases in which he used Dr. Cohen's plan "with the best results." The cases occurred in the Lying-in Hospital at Hamburgh. He closely followed Dr. Cohen's instructions. The following is his account of the effects produced.

"At the end of one, at most of two, hours after the injection, the patient complained of a heavy pain in the hypogastrium, frequent desire to pass urine, and had a copious discharge of mucus *per vaginam*. The injection being repeated more or less frequently, there appeared relaxation, softening, and shortening of the vaginal portion of the uterus, with dilatation of the os uteri, and descent of the uterus and fœtus; the walls of the uterus became firmer and more contracted; distinct labour pains then always continued, until the os became fully dilated, and the second stage of labour was entered on. In every case, the first injection produced the premonitory symptoms of labour. The operation did not give rise to any unpleasant symptoms in the course of the labour, nor was it followed by any considerable hemorrhage; but the end of the tube introduced was always covered with bloody mucus. The quantity injected on each occasion was two ounces. Tar water was generally used: simple warm water was employed once, with the same results."

Dr. Cohen, in the 'Deutsche Klinik' for February 11, 1854, says that eighteen cases of his operation have been recorded; viz.: ten by Dr. Steitz; one by Poutonnier; six by Dr. Cohen; and one by Professor Kilian. The last case is recorded at p. 490.

Injection of the uterus as a means of inducing premature labour has, I think, been practised before Dr. Kiwisch or Dr. Cohen wrote; though I cannot at present give any evidence from my notes in support of this statement. I find, however, in the 'Edinburgh Monthly Journal' for October, 1844, the following anonymous article taken from the 'London Medical Gazette' of July 19th, of the same year, upon "injection of the uterus, as a means of expediting and facilitating delivery."

"A farmer in the neighbourhood of Edinburgh, son of a late eminent surgeon of that city, and well known to the editor of this journal ('Med. Gazette'), frequently had cows in great distress during their accouchement, and now and then perhaps, like other farmers, he lost a cow in the act of parturition. On one occasion, when a poor animal of considerable value had been suffering for a very long time, and there was every prospect of an unfavourable issue to the affair, as it seemed inevitable that the poor creature must die undelivered, the owner hurried into Edinburgh, distant about five miles, and took council with the eminent veterinary professor, Mr. Dick, as to the course to be pursued.

"At the suggestion of that gentleman, he, with all the expedition possible, threw into the uterus from six to eight quarts of tepid water, the animal's hind quarters being previously elevated by a bundle of straw, so as to aid in preventing the return of the water. The instru-

ment employed in the injection was the flexible tube, (in fact, that used for the stomach pump), attached to Read's patent syringe, which was easily introduced over the shoulder of the fœtus, the muzzle and fore-feet of which had been ascertained to be presenting at the commencement of the labour. The liquor amnii had completely escaped at a very early stage, and it was fully twenty-six hours afterwards before Professor Dick's excellent and ingenious advice was applied. But after the injection, the calf was felt floating freely in the cavity of the womb. The animal, however, was so totally exhausted, that there still seemed no hope of the calf being expelled by the natural efforts. Nevertheless, within five minutes after the injection of the water, a vigorous pain came on, and the patient was speedily and safely delivered of a live calf, and sustained no other ill consequences than a few days' weakness, the natural effect of her previous suffering.

"Our friend mentioned this very ingenious plan to a neighbouring surgeon-accoucheur in large practice, who was so much struck with its simplicity and apparent safety, that he resolved to adopt it on the first favourable opportunity. An occasion soon presented itself, in a case where nothing but the long forceps could have effected the delivery of the sufferer; and shortly afterwards in a second instance, where turning and delivery by the feet would have been indispensable to save the patient's life.

"In both cases the injection of about a quart of tepid water was attended with complete success; the patients were both delivered of living children by the natural efforts, without any unfavourable symptoms ensuing.

"We have gathered these particulars from the owner of the cow, the gentleman who, with his own hands, made practical application of Professor Dick's valuable suggestion, believing that the procedure indicated is new, free from danger in itself, and likely in many cases to obviate the necessity for more formidable and painful operations."

5. *Galvanism.*—In 1844, Dr. Radford of Manchester directed the attention of the profession to galvanism as an obstetric agent. He pointed out its advantages in uterine hemorrhage. Dr. Simpson of Edinburgh, about the same time, wrote in favour of this method of treatment; and it has since been adopted by many other practitioners. In a letter which I received from Dr. Radford, dated 10th May, 1854, he says: "I have four times successfully employed galvanism to induce premature labour, in cases in which the pelvis was contracted. In a fifth case, it only induced a temporary and partial influence. The uterus hardened under the application; but this effect was transient. It was afterwards necessary to use the sponge-tent."

Dr. Barnes and others have successfully employed galvanism in the artificial induction of labour. It appears, however, that it is rather in formidable cases of uterine hemorrhage that galvanism is most appropriately employed to excite uterine contraction; and for

this reason, further details are postponed until that subject comes under consideration.

6. *Administration by the Mouth and Anus of Medicinal Stimulants of the Uterus.*—There can be no doubt that premature labour may in certain cases be induced by the administration of ergot of rye, Indian hemp, and other drugs which act on the uterus, in virtue of their peculiar powers. Purgatives which irritate the rectum, and medicines such as cantharides, which excite the bladder, also have a tendency to induce premature labour by causing congestion and irritation of the uterus. Medicinal stimulants of the uterus cannot, however, be relied on exclusively when we wish artificially to induce labour; and, indeed, except when there is a predisposition to miscarry, they seem to have little power in determining parturition, even though administered in violent and dangerous doses. As adjuvants in lingering cases, when the labour has actually been instituted by artificial means, the ergot of rye in repeated doses, and the employment of turpentine enemata, may be advantageously resorted to, just as we use them in slow natural labours, when there is no contra-indicating cause. An enema, consisting of about six or eight drachms of turpentine, mixed with twice or three times as much castor-oil, olive oil, or other bland fluid, has often an admirable effect in expediting labour. It cannot injure the fœtus, as the ergot often does; and it can be employed when the ergot has been or is likely to be rejected by the stomach.

7. *Topical Excitation of the Mammæ.*—Dr. Scanzoni has advocated the irritation of the mammæ by successive applications of the breast-pump, as a new and efficient means of inducing labour. From some experience of the galactagogue and emmenagogue effects of mammary irritation, I am inclined to believe in the frequent success which may attend Dr. Scanzoni's plan: but its superiority over other means, or the propriety of relying upon it as an independent proceeding, is at least problematical. According to present evidence, it is neither a certain, nor is it always an innocuous proceeding.

In a paper which I published in the 'Association Medical Journal' (*Retrospect*, Vol. xxviii, p. 357), entitled "Galactagogue and Emmenagogue Effects of Warm and Stimulating Applications to the Mammæ," a caution was given as to the bad consequences which were apt to result from pushing mammary irritation too far, which may here be quoted as a testimony in favour of the reality of the power over the uterus possessed by the irritating action of the breast-pump of Scanzoni. I remarked:—"As regards the ovaries and uterus, the effects produced upon these organs must be attentively watched; for the very greatness of the power which irritation of the mammæ exerts over these organs, may constitute an element of danger. In endeavouring to excite menstruation, we must take care not to excite inflammation of the ovaries, or of the womb." When these sentences were written, I had not become acquainted with the proposal of Scanzoni.

One great objection to Scanzoni's proposal is, that the irritation excited in the breasts may remain after labour, and give serious rise to a complication of the puerperal state.—*Association Med. Journal, June* 2, 1854, *p.* 487.

108—ON PUERPERAL CONVULSIONS.

By A. B. Steele, Esq., Liverpool.

In the treatment of puerperal convulsions, the highest authorities recommend copious depletion, almost without reservation. Dr. F. Churchill says :—"The first thing to be done is to take away blood from the arm or temporal artery *largely ;* if the paroxysms continue, this may be repeated." He insists on no condition as to the state of the patient, or as to the probable exciting cause of the fits, apparently considering that the existence *per se* of convulsions is a sufficient indication.

The experience of the late Mr. Crosse, of Norwich, was in favour of bloodletting. In his work on Midwifery, he gives the history of twelve cases ; in eleven of which free depletion was practised and followed by recovery. In the only fatal case, he says :—"In consultation bleeding was not thought proper, and counter-irritation, &c., were the only means employed."

Dr. Copland, in his 'Dictionary of Medicine' in the article Puerperal Convulsions, observes :—"Depletion may be carried further in those states of the disease which assume the character of eclampsia, or which are attended by great fulness about the head, or stertorous breathing, than in almost any other malady."

Dr. Rigby advises free depletion ; and all the writers, with one exception (Tyler Smith), whose works I have consulted, recommend copious bloodletting as the first and great remedy ; the extent to which it is to be carried, being regulated mainly by the violence and frequency of the fits.

The history of the patient, her previous habits, as well as the peculiarities in each case in reference to the predisposing and exciting causes, are ignored altogether as indications for or against the use of the lancet ; so that the practitioner is left without any guiding principles upon which to regulate his practice in this particular, and he uses this powerful remedy almost entirely empirically. It is, nevertheless, most important that some sound data should be given to regulate this very important and powerful remedy, for it is as injurious in unsuitable as it is indispensable in suitable cases.

There is a somewhat similar difficulty with regard to what is perhaps the second matter in importance in the treatment of puerperal convulsions—namely, the question of interference in the progress of labour by artificial delivery ; but here authorities are not all agreed as to the main question ; and few, if any, have pointed out any very satisfactory principles to guide us in deciding when it is necessary or proper

to interfere, and when we ought to trust entirely to nature. Dr. Ramsbotham is in favor of turning ; Dr. Collins is strongly opposed to it ; and Dr. Churchill considers it a most hazardous measure. Dr. R. Lee deems it an essential part of the treatment to empty the uterus of its contents as speedily as possible. Dr. Rigby says there is little chance of the convulsions ceasing until delivery is completed. A later writer, however, has thrown much light upon this subject, and his observations appear to me highly valuable, and of the last importance in removing the difficulties above mentioned ; I shall therefore quote his views, as stated in his recent work. The author I allude to is Dr. Tyler Smith, whose views are founded upon Dr. Marshall Hall's researches into the physiology of the nervous system ; and his practical application of that physiologist's discoveries to the pathology and treatment of puerperal convulsions is interesting and useful.

Dr. Tyler Smith considers that puerperal convulsions depend upon one of two causes—viz, irritation of the spinal marrow, or upon some irritation of excitor spinal nerves ; and then he goes on to say :—" The action of bloodletting on the spinal marrow is greatly modified by the condition of the circulation ; in fulness of the vascular system, it is the most powerful sedative of spinal action we possess ; hence venesection is the grand remedy in the simple form of puerperal convulsions, where the disease chiefly depends upon stimulation of the spinal marrow by excess of blood, or on the mechanical pressure exerted by the blood on that organ, together with the counter-pressure of the distended brain on the medulla oblongata. But another most important intention of bloodletting is that of preserving the brain from injury during the convulsion. Besides the primary cerebral congestion, which may have been the cause of the attack by its counter-pressure on the medulla oblongata, the convulsive action itself with the glottis closed, the various sphincteric actions in operation which constitute what is called by Dr. M. Hall sphagiasmus laryngismus, cause the greatest turgidity of the vessels of the head, and are dangerous sources of fatal cerebral congestion, or of serous or sanguineous effusion ; thus, in plethoric states of the circulation, bloodletting is curative in its action on the spinal marrow, preventive in its action on the brain.

" In the absence of definite ideas regarding the effect of bloodletting in this malady, it has often been pushed to excess, or practised where it should have been altogether avoided. In the numerous cases where, besides vascular excitement of the spinal marrow, some irritation of the spinal excitor nerves exists as a conjoined cause of convulsions, repeated bleedings will often fail to subdue the disease, unless the eccentric irritation be at the same time removed ; when irritation of the uterus, rectum, or the stomach, is in part excitor of the convulsion, bleeding *alone* cannot be relied on. It may at first diminish the impressibility of the central organ, rendering it less sensible of the incident irritation ; but if persisted in to a large extent without the removal of the eccentric irritation, it becomes in the end positively in-

urious, by increasing instead of diminishing the excitability of the spinal marrow."

He then furnishes the rule by which we are to be guided :—

"The propriety and the extent of bloodletting must be estimated not by the violence of the disease, but by the state of the circulation in the interval of the fits, and with especial reference to the different effects of vascular plethora and vacuity upon the spinal centre."

These observations of Dr. Tyler Smith will, I think, render the practitioner valuable aid in coming to a decision upon the question of depletion in the treatment of this disease, and especially in reference to the repetition of bloodletting when the first quantity taken, although large, has failed to relieve the fits. I apprehend that, in most cases of puerperal convulsions of a severe character, one full bleeding would be justifiable and proper, on the principles laid down by Dr. T. Smith ; and when this has been done, and the fits still continue unabated, before pushing depletion further, bearing in mind the principles he has enunciated, we are led to investigate the various possible sources of irritation to incident excitor nerves, such as distension of the uterus or of the bladder, or the presence of irritating matters in the stomach or intestines, and the propriety of the administration of opiates, especially by the rectum, would demand a full consideration.

In considering the propriety of interference in the progress of labour —a question upon which, as we have before noticed, the authorities are not at all agreed—we derive equal assistance from the views of Dr. Tyler Smith. After observing that the question of interference is one for which no arbitrary rule can be laid down, but which must be decided in each individual case by the particular circumstances, due regard being paid to the excitability of the uterus under the stimulus of the fœtus, and under the artificial interference, he advises the evacuation of the liquor amnii, which, by relieving the distension, diminishes the size of the organ and the quantity of blood circulating through it ; and hence, although it renders the uterus more active by bringing its parietes into contact with the fœtus, it renders the organ itself less irritating to the general spinal system. The evacuation of the liquor amnii is to the uterus what the partial action of an emetic or an enema is to the stomach and intestines. With regard to the general principle which should guide us in deciding upon artificial delivery, it is to be observed that, whenever it can be effected with less irritation than would be produced by the continuance of the child in the parturient canal, and its expulsion by the natural process, it is advisable that it should be performed.

These general principles appear to be applicable to all ordinary cases of puerperal convulsions, and will be found of material assistance in enabling us to treat that formidable disease, if not with invariable success, at least upon rational and scientific principles ; and they will also serve in some measure to reconcile the apparently contradictory and diversified statements and theories of different and differing authors.

It does not fall within the object and limits of this paper to speak of the numerous other special remedies which have been recommended in the treatment of puerperal convulsions, my intention being to draw attention to the two main questions of bloodletting and artificial delivery ; nevertheless, I do not wish to leave the subject without some allusion to the use of chloroform. I have no experience of its effects in this disease in my own practice, but have had considerable opportunities of noticing the phenomena attending its administration in surgical cases ; and from observation and reasoning, I should not be led to expect much benefit from it, beyond the collateral advantage of allaying nervous excitement in some exceptional cases. I say exceptional cases, because I believe that, in the most common form of this disease, in which there is more or less congestion of the brain, and where the fits are produced by other causes than those which depend upon excitement from without, or upon any impression made upon the sentient faculties, such as fright, excessive pain or irritation from prolonged suffering, or the like, chloroform could not be expected to exert any influence over the origin of the disease. It might, on the contrary, act as a predisposing cause, and render the paroxysms more frequent and violent : for it has been noticed by Dr. Marshall Hall, that, when the functions of the true cerebral or sentient portion of the nervous system are diminished or abolished, as is the case in anæsthesia, the irritability of the excito-motory or true spinal system of nerves is increased. Hence it follows, that convulsions being a disease of the true spinal system, they would be the more readily produced, the spinal nerves being more susceptible of any morbid impression conveyed to them : so that the only probable advantage to be derived from the use of chloroform is to shut out any exciting causes of convulsions which act through the medium of the functions of sensation ; and this, be it remembered, is at the risk of rendering the system more susceptible of those much more important exciting causes which are probably, in almost every case, the real origin of the disease. That chloroform does not directly control the functions of the excito-motory system, is manifest enough from its ordinary effect upon the progress of natural labour ; for there, although sensation is more or less diminished or annihilated, yet the contractions of the uterus, an excito-motory act, still continue.

It is further worthy of remark that chloroform frequently produces a state of system nearly approaching, if not actually reaching that of convulsion ; and I have frequently observed that it produced a considerable amount of congestion of the vessels of the head and neck—in fact a slight degree of sphagiasmus—a condition which cannot be looked upon as favourable to the patient, already nearly asphyxiated by the paroxysms.

Another objection might be urged against the use of chloroform in many cases of puerperal convulsions ; namely, the peculiar condition of the circulation which, as noticed by myself and by other observers,

frequently obtains in this disease. The heart's action fluctuates in a most remarkable manner, the pulse sometimes being full and indicating a fair amount of vascular force ; at others, so small and feeble as scarcely to be felt. Now, if chloroform should be given to a patient in the state indicated by the latter condition of the pulse, it might be regarded as a most fortunate escape if the heart's action were not altogether abolished, as we have seen in some unfortunate cases which have occurred in surgical practice, where a very small quantity of the anæsthetic agent has destroyed life by paralysing the action of the heart, already enfeebled by the supervention of depressing causes, such as fear or the like.

In cases where there exists, as a prevailing peculiarity, a great amount of nervous excitability of the system accompanied by restlessness, chloroform may be useful by producing sleep ; or, in cases where pain seems to be the exciting cause, anæsthesia would no doubt be a useful means of relieving the patient ; and to these and to analogous forms of the disease I believe its use should be limited.

In the sthenic forms of convulsions, accompanied by congestion and fulness of the vascular system, it can, I think, do little good, and might do much mischief.—*Association Medical Journal, July* 28, 1854, *p.* 669.

109.—ON SYPHILIS AS A CAUSE OF ABORTION AND PREMATURE LABOUR.

By Dr. Robert Johns, Dublin.

[Dr. Johns commences an interesting paper with the following case :]

Mrs. H., aged 30, married five years, consulted me on the 17th of February, 1852, under the following circumstances :—She stated that she had brought forth four dead and putrid children: the fi st a hydrocephalic male, after a natural labour, at the full time ; the second a female, prematurely, at the eighth month, the breech presenting; the third, a hydrocephalic male, prematurely at the seventh month, the breech presenting; the fourth, a hydrocephalic male, at the sixth month, the breech presenting. She ceased to feel the movements of of each her children from ten days to a fortnight previously to the advent of labour.

The catamenia first appeared when she had attained her eighteenth year, returned regularly and naturally every month, and continued to do so until her marriage, from which time, for three months, they were very irregular and painful. In consequence of her husband's avocations she was separated from him for eight or nine months, during which period the menstrual secretion was perfectly regular and natural. Immediately on returning to her husband she proved pregnant, and fell into bad health, in which state she continued for the first three months of gestation, but from thence until the birth of her

child she enjoyed good health, with the exception of irritation of the bladder causing a constant desire for micturition ; and such was the condition of all her subsequent pregnancies. Very early in her first pregnancy she had some white blisters on the labia pudendi for a day or so, but which disappeared without treatment.

This lady had consulted several other medical men, all of whom, considering the unfortunate issue of her labours to have been caused by debility, treated her by tonics, but, without success.

At the time of Mrs. H.'s visit to me the following were her symptoms. The menstrual secretion had ceased for three months ; she considered herself pregnant ; when not so her periods were irregular and painful. There was not any pallor of countenance, but the face was greasy, and covered with spots not to be washed off. She suffered much from giddiness, as if about to fall, accompanied by great fear, but had not any cephalalgia ; a sinking feel in the stomach, with much debility and langour ; palpitations and other hysterical symptoms ; constipated bowels, with flatulence, loss of flesh, appetite, strength, and sleep ; darting pains in the breasts under the nipples ; dragging diagonal pains from the loins to the pubis ; pain in the region of both ovaries ; pain and weakness over the sacrum ; weight and bearing down in the vagina and in the rectum ; enlarged inguinal glands ; a greenish, watery, and sometimes a whitish vaginal discharge, very like to the unboiled white of an egg ; pain in congress, and uterine inertia. On adopting the toucher the os uteri was found patulous, the cervix soft, elongated, otherwise enlarged and insensible to pressure, but not conveying to the finger the idea of the presence of ulceration. The speculum revealed extreme vascularity and inflammation of the os and cervix ; an ulcer of the cock's-comb variety covering the entire of the anterior and the greater part of the posterior lip, and extending for some distance into the canal of the cervix, from which cavity issued a tenacious and purulent discharge, slightly tinged with blood ; a purulent discharge also was seen escaping from the urethra, which was very much inflamed. The fœtal heart was not audible at this visit, but it was heard occasionally until about a fortnight before labour set in.

She was ordered a tonic mixture with iodide of potassium. The acid nitrate of mercury was applied to the canal of the cervix, and to the ulceration on the labia uteri, also a solution of nitrate of silver to the urethra.

22nd February. To have half a grain of the oxymuriate of mercury in decoction of sarsaparilla three times a day ; the cervical canal was again touched with the acid nitrate of mercury, and a solution of nitrate of silver was freely applied to the ulcerated surface of the cervix.

25th March. Up to this date Mrs. H. has been taking the mixture just mentioned, which being found to disagree was discontinued this day, the following being substituted for it : one grain and a half of

Plummer's pill, and two grains of extract of henbane, every night; and a mixture containing extract of dulcamara and iodide of potassium twice a day. This treatment, together with the occasional use of the before-named caustics to the ulcers was continued up to their cure (the 5th of June), the mouth having been sore from the 10th of March till that date.

11th June. She was delivered this day of a putrid hydrocephalic female infant, presenting with the breech.

This lady recovered well and quickly of this confinement, and went to the country to recruit her strength, where she remained until the 12th August, 1852, when I was again called to visit her. On that occasion the uterus was again examined, when a great amount of inflammatory engorgement of the os and cervix, together with superficial ulceration, was found to exist.

Blood was taken by the lancet from the os and cervix, and potassa fusa was freely applied to these parts. At the same time she was ordered to rub in one drachm of murcurial ointment twice a day, which treatment (her mouth becoming sore in two days) was continued until the 29th of September, when, as she was too sore to persist with frictions, the following pills were substituted for them: blue pill, a scruple; colomel, five grains; opium, three grains; in six pills, one every night. These kept up the ptyalism until about the beginning of December, when she was pronounced cured. From time to time the potassa fusa and nitrate of silver were used with the diseased womb.

She proved pregnant on the 23rd of December, 1852, enjoyed excellent health during the whole period of gestation, and was safely delivered of a fine, full-grown, healthy, male child, on the 29th of September, 1853.

Mr. H. (this lady's husband) was also submitted to treatment on the 10th of July, 1852. He commenced taking the following pills, it not being convenient to employ frictions, which I very much prefer; blue pill, a scruple; calomel, twelve grains; opium, three grains; into twelve pills, one twice a day. These made his mouth sore, in which state it was kept until the 10th of October, 1852, when an eruption of the nature of acne rosacea came out on his face and neck, but which was removed by the following mixture: extract of dulcamara, iodide of potassium, of each one drachm; lime water, twelve ounces, mix; two tablespoonfuls to be taken three times a day. Of course this couple lived apart whilst under treatment.

This I regard as a very interesting and important case, containing many features of practical utility, whether regarded in a curative or medico-legal point of view, and one requiring a very accurate diagnosis. the accomplishing of which was not without some difficulty arrived at, for the following reasons:—

1. The husband of the lady denied ever having had syphilis in any form, primary or secondary, and stated himself to be in perfect health;

and though he was very accurately and minutely examined, not the slightest trace of lues was discoverable.

2. Mrs. H. never had any symptom whatever of the disease, locally or constitutionally.

3. All her symptoms could have been produced by disease of the womb of a non-specific nature. I may here be permitted to state, that I do not recognise any ulcer of the womb as necessarily syphilitic, save the Hunterian chancre, which is very rarely met, indeed I never saw it but twice; all the other affections of the os and cervix which have been laid down as syphilitic have come under my observation in females in whom it was most improbable, if not impossible, that such a taint could ever have existed, and have given way to treatment of a non-specific nature.

The plan of treatment which terminated so successfully here was employed on the following grounds:—

1. Because other means had failed.

2. On account of the order of the premature labours which I believe to be diagnostic of this disease, as from my experience I conclude that, in the generality of such cases, there is a regularity in their occurrence, either in a retrograde direction, as in the present instance, or in a progressive one, as in most others. For example, a female miscarries at three months, then at four months, and so on up to seven or eight months, when there will be a putrid child, with the skin peeling off, and other appearances so well known as a "pocky" child; then perhaps she may carry the child to the full time, when it will be born either with the disease, when "he who runs may read," or apparently healthy, in which the disease shall appear in some few days, or even in months after.

3. Because, had these arrests of gestation depended solely on the disease of the womb, she should have gone to the full time, as the ulceration was cured before the birth of her last child.

[Dr. Johns maintains that there is but one method of preventing abortions and premature labours in females tainted with syphilis, and that is the use of mercury for both parents—to the female when not pregnant—the patients being kept under its influence for six weeks or two months. After referring to several cases, Dr. Johns draws the following deductions:]

1. That secondary syphilis is not curable in the pregnant female.

2. That mercury is the only certain means of preventing the abortions and premature labours depending on syphilis.

3. That both parents must be submitted to this treatment.

4. That as the disease in such cases exists in the secondary form, the system must be kept under the influence of the metal for at least six weeks, and in some cases even longer.

5. That syphilis is communicable to the female through the semen of the male, without the presence of any ulcer or purulent discharge.

6. That secondary ulcers on the female genitals do not infect the male by whom she was contaminated, so long as he is poisoned by the infection which gave it to her.

7. That as syphilis is communicable from a child to its nurse, and *vice versâ*, great care ought to be taken that an infected child be not given to a sound nurse, nor a pocky nurse be hired for a sound child.

8. That syphilis in infants is only curable by mercury, which is best given directly to the child, as also to its nurse.

9. That there is no disease of the uterus, save the Hunterian chancre, which is pathognomonic of syphilis.

10. That the order of the abortions and premature labours is a very good test of their cause.

11. That ulceration may exist to a great amount on the os and cervix uteri, and not be discoverable by the toucher.

12. That the patulous state of the os uteri, induced by inflammation, may be present during pregnancy.

13. That children dying in the uterus from syphilis, like those dying from other causes, are thrown off within a fortnight or so after the cessation of vitality.

14. That there is a class of abortions and premature confinements preventible by iodide of potassium and similar medicines.—*Dublin Quarterly Journal of Medical Science, Nov.* 1854, *p.* 307.

110.—ON THE TREATMENT OF DESCENT OF THE WOMB.

By Dr. A. Desgranges, Surgeon in Chief to the Hotel Dieu, Lyons.

[Various attempts have been made to contract the vaginal canal in order to enable it to support the prolapsed womb without artificial means. The following methods seem new, but we doubt whether they will have any advantage over other means of accomplishing this object.]

Dr. Desgranges proposes to diminish the calibre of the vagina, and to render the uterus stationary by two entirely new methods. The first consists of a number of small forceps applied to the upper portion of the vagina, and allowed to remain until they come away themselves. The instruments he employs consist, first, of a number of small forceps with the blades crossed, like the tenaculum forceps of Sir P. Crampton. The points (A), which are sharp, are prominent, and cross each other, and the edges are rounded off, but the free extremity is armed with a prominent edge. The spring is sufficiently strong to make adequate pressure, without the instrument being too cumbrous.

In order to apply the vaginal "pinces," we have next a pair of forceps with a groove at their extremity, in which the outer end of the "pince" is to be placed up to the point where the blades bend in

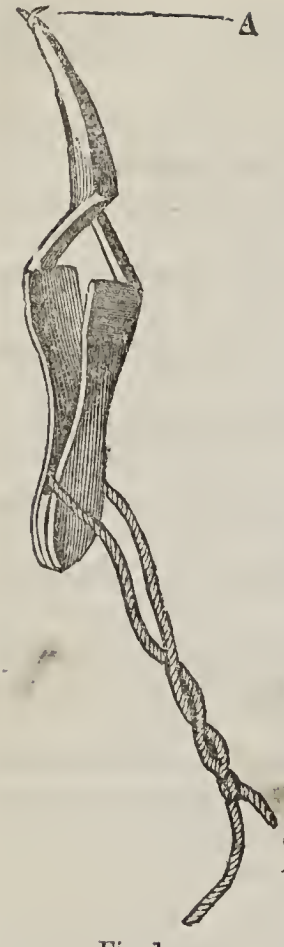


Fig. 1.

order to cross each other. The firm closure of the blades of this forceps presses open the points of the "pinces vaginales," and so enables us to apply them in situ without difficulty.

In applying these little instruments Dr. Desgranges makes use of the three-bladed speculum or of the gorget as a guide.

They should not merely seize the parietes by their points, but also by the curved portions of the blade, the convexity being towards the vagina, which it will hold firmly by the overlapping edge. The number of "pinces vaginales" to be applied will vary from six to nine, according to the state of the vagina, and it is better to commence with the posterior wall and the lower extremity of the vagina. When all are applied, the double T bandage is to be fixed, and the patient confined strictly to bed until the instruments come away, which is generally from the sixth to the tenth day.

When the parts are healed, the operation is to be repeated, the instruments being applied to a different portion of the vaginal walls; and when the canal is reduced in size, the gorget or the fingers only should be used as a guide in applying the "pinces vaginales," as the distension by the speculum might be injurious. In this way, by the successive application of these instruments, and, as Dr. Desgranges says, "mieux vant trop que pas assez," the calibre and length of the vagina are so much reduced in diameter that it is quite capable of supporting the uterus and preventing prolapse. There is very little irritation occasioned by the application, and the number of small cicatrices which are perceptible at first, diminish by degrees, and finally disappear; so that, as Dr. Desgranges states, the operation does not interfere with any of the functions of this part. So much for the mode of operating. We have next a minute account of eight cases, of which six appear to have been completely cured by this method, and in two the relief was incomplete. If further experiments furnish similar results, which we think very probable, we shall have to thank Dr. Desgranges for an additional means of relieving a most unpleasant disease.

The second plan of Dr. Desgranges is a combination of mechanical pressure, and the application of caustic. The instrument consists of a pair of forceps armed with sharp points, below which is a receptacle for caustic; this is called the "pince elytro-caustique," and its application is aided by a vulsellum with one point only in each branch. The caustic used by Dr. Desgranges is the chloride of zinc, for the action of which he prepared by a previous application of another kind of caustic (caustique Filhos.)

The operation is as follows :—

A fold of the mucous membrane of the "cul de sac" of the vagina is to be seized with the vulsellum, and drawn downwards, whilst the cervix uteri is to be pushed to the opposite side of the pelvic cavity; then the "elytro-caustique," guided by the finger, is to be applied as largely as possible to the fold of mucous membrane, and maintained so by the spring at its lower end. In about forty-eight hours the vitality of the portion thus included is destroyed, and a similar operation is to be performed on the other side of the cervix. After each operation a double T bandage is to be applied, and the patient confined to bed. Dr. Desgranges thinks that five or six operations may be necessary, but as no cases are given it is not clear that he has ever tried this operation.

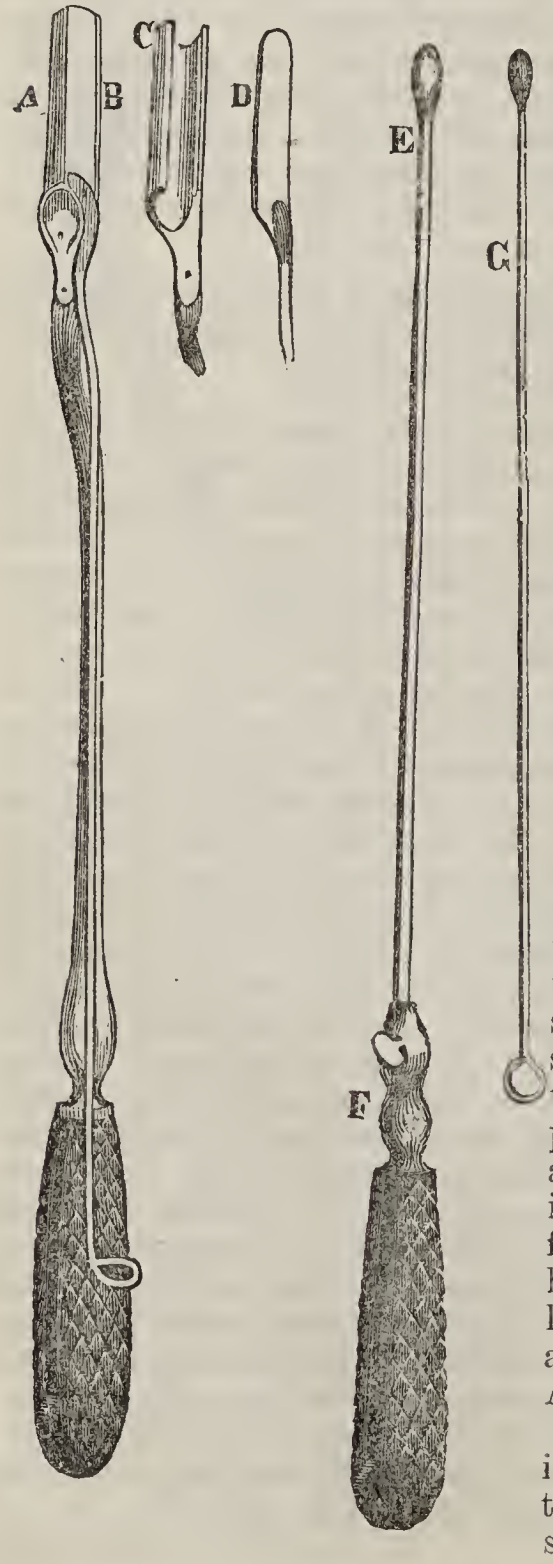
Not having ourselves had an opportunity of trying or seeing tried these operations, we shall not venture an opinion, but content ourselves with extracting Dr. Desgranges' conclusions :—

I. Prolapse of the uterus, though difficult to cure, is not incurable. II. It may be cured by an union of means, which constitutes the new method. III. This treatment for prolapsus may also advantageously modify other displacements and flexions of the uterus. IV. The basis of this method is the constriction and destruction of folds of the vagina by means of "*pinces.*" V. The "*pincement du vagin*" includes two procedures, the first by means of the small forceps, "*pinces vaginales,*" and the second by means of the "*pinces elytro-caustique.*" (A.) 1. *First procedure.*—As many "*pinces*" should be applied in the first operation as possible. 2. They come away themselves from the fifth to the eighth day. 3. The number of operations varies from eight to ten; better more than fewer. 4. The treatment occupies about three months. 5. No death, no local disorder, nor general symptoms. (B.) *Second procedure.*—1. An "elytro-caustique" is applied on each side. 2. They are to be removed in forty-eight hours. 3. The number of applications and duration of treatment must be determined by circumstances. 4. No death; feeble reaction; no local symptoms. 5. The caustic in the grooves does not alter the plan, as its action is limited, and the forceps alone may succeed. 6. The chances of cure are greatest in young and healthy women, and in the absence of complications. 7. Considerable "engorgement" of the cervix will require appropriate treatment; moderate "engorgement" need not interfere with the operation. 8. The cure is probably less owing to narrowing of the vagina, than to an organo-plastic process, which, extending beyond the organ, restores their lost tonicity to the utero-sacral ligaments, and to the areolar tissue of the pelvis. 9. The treatment does not prevent cohabitation nor fecundation, nor will it be a cause of dystochia. 10. If the cases are not sufficient fully to establish this method, they prove its harmlessness, and justify our hopes.—*Dublin Quarterly Journal of Med. Science, Nov.* 1854, *p.* 405.

111.—INTRA-UTERINE SPECULUM AND STILETS FOR CAUTERIZING THE INTERIOR OF THE CERVIX UTERI.

By M. Jobert.

In the number of the 'Bulletin Thérapeutique' for the 15th July, 1853, is reported the history of a patient on whom M. Jobert had performed intra-uterine cauterizations for the cure of an obstinate neuralgia of that organ, complicated with metrorrhagia. The operator, for want of a special instrument, then made use of a probe mandrel, heated to whiteness, introduced through the external orifice of the cervix uteri by means of an ordinary speculum. M. Jobert, reflecting on this case, has since conceived the idea of having a little speculum made which should serve both for exploring the interior of the cavity of the cervix uteri, and conveying to that part the heated iron, or any other local agent, the action of which it should be important to limit, so as to protect the neighbouring sound parts.



This speculum (made by M. Charrière) consists of a hollow cylinder A, B, which, when furnished with its stopper G, very well represents an ordinary solid speculum, but reduced to dimensions which admit of its passing through the orifice of the os tincæ, previously exposed in the field of another speculum. In order that it may be easily manœuvred it is furnished with a sufficiently long handle (fig. A, B). This speculum is so divided that it can be at will transformed from a cylinder A, B, into a groove C.

The instrument having been introduced, the movable part of the wall of the cylinder D, which slides in a groove made in the

fixed part C, is withdrawn by means of a special handle. The advantage of this division in exploring successively the several portions of the parietes of the cavity of the cervix uteri, in the same manner as we examine the walls of the vagina, by removing one of the valves of a three or four-valved speculum, is easily understood. An olive-shaped cautery, of a diameter corresponding to that of the speculum, may be introduced into the interior of the womb without touching the walls of the cervix when they are to be avoided, or may, at the will of the operator, be made to act only on a given point of these same walls, which is accomplished by taking away the movable blade D, and leaving in the uterus only the groove C.

M. Jobert has twice had occasion to use this instrument. In the two cases, which closely resembled one another, ulcerations existed in the very interior of the cavity of the cervix, with fungous granulations, secreting pu nd giving rise to frequent hemorrhages. In one case cure was obtained after three cauterizations. The second patient is in progress of recovery.—*Dublin Quarterly Journal*, *Nov.*, 1854, *p.* 467.

112.—*On Hypertrophy of the Womb.* By Dr. Meigs.—Let it be remembered that the womb is constitutionally prone to set off on a race of hypertrophic development, and we may then understand how it shall be readily provoked to commence a process of hypertrophisation, by the awkward, unnatural, and irritating posture it acquires in retroversion. We have met with some of these cases in which the womb grew so much that the fundus was jammed against the hollow of the sacrum, and the os against the symphysis, or on the soft parts above it, compressing the bladder most mischievously, but not at all bending the womb itself. In other specimens, we find the uterus bent like a retort. The angulation in some of the examples is almost acute; so that the calibre of the canal of the neck is seriously diminished, and its function as an efferent duct for the menstrua in a measure hindered: whence we have distressing dysmenorrhœa.

Medical men called upon to diagnosticate in such cases, should be very careful first to establish in their minds the ideal or standard, by which to compare; otherwise they will be apt, upon finding the whole pelvis occupied or blocked up with an immense and immovable solid mass, to conceive of it as a tumour; whereas it may prove in fact to be no tumour, but only an overset and enormously hypertrophied uterus. We have met with repeated examples of such misinterpretation of the case, women being supposed to labour under tumours within the pelvis, whereas the supposed tumours were nothing more than the posterior aspect of the corpus and fundus uteri turned over, and touched through the posterior membranous wall of the vagina; and wholly disappearing as soon as the womb could be properly reposited.—*Association Medical Journal*, *April* 28, 1854, *p.* 376.

113.—ON THE USE OF POTASSA FUSA AND POTASSA CUM CALCE IN UTERINE DISEASES.

By Dr. J. Henry Bennet.

[We are glad to perceive that the *fashion* of practising on the os and cervix uteri with these powerful caustics is subsiding. There may be cases in which they are useful, but we certainly think that the remedy has been dreadfully abused. Even Dr. Bennet acknowledges that in unskilled hands it is a dangerous remedy—a double-edged sword.]

M. Gendrin always used a paste made of the potassa cum calce of the Pharmacopœia, moistened with alcohol. I myself followed his example for some years; but, finding its application difficult, I first tried the caustic potash of Dr. Filhos, and then potassa fusa alone. The former consists of two parts of lime and one of potash, run into lead moulds. I found these tubes convenient for use, but not sufficiently active; whilst the pure caustic potash in cylinders was so very deliquescent, that it required a troublesome process of packing the surrounding parts with cotton steeped in vinegar, to limit the action of the caustic to the region on which it was intended to act. This induced me to try if I could obtain cylinders of potassa cum calce in a more active form: two parts of potash to one of lime, and in a free state—that is, not cased in tubes. In this attempt, with Mr. Squire's assistance, I completely succeeded, by casting it in iron moulds, and obtained sticks of potassa cum calce nearly as active as the pure potassa fusa, and yet having the non-deliquescent properties of the potassa cum calce paste. These cylinders, which are made of various sizes, render the application of this powerful remedy as easy as that of the nitrate of silver, no previous packing of the parts being necessary, and the action being limited to the part to which it is applied. Thus has been attained a great desideratum—a valuable agent, which could previously only be used with some trouble and risk, having been rendered manageable and safe.

The conditions of local uterine disease in which I consider that potassa cum calce may be used with advantage, are—*intractable* chronic inflammation, or inflammatory ulceration of the mucous membrane covering the cervix uteri, or lining the cervical canal; chronic inflammatory hypertrophy of the cervix; and lastly, chronic inflammation of the body of the uterus, in which form of disease I merely apply the caustic potash to the cervix, to produce a derivative issue.

The principles on which I have endeavoured to found the local treatment of the chronic inflammatory conditions which are so common about the cervix, its os and cavity, are those which ought to regulate the treatment of all inflammatory diseases of the skin and mucous membrane in explorable regions. If the acute or subacute stage of inflammation still exists, emollient applications and local depletion are indicated; if that stage has passed, and the disease appears in the chronic form, astringents should be used to directly modify the diseased

capillary circulation, and they failing to restore healthy action, caustics should be resorted to, especially if ulceration be present, with a view to substitute healthy, reparative, manageable inflammation for that in existence, which is unhealthy, destructive, and unmanageable. This appears to me the true *modus operandi* of caustics and of the actual cautery, whenever they are used in the treatment of morbid inflammatory conditions, from a minute ulcer of the cornea to hospital gangrene. The inflammation set up by nature to throw off the eschar artificially produced, is naturally of a healthy, reparative kind, which admits of being controlled and brought to a favourable termination, *provided the stimulation be sufficiently powerful.* Thence it is that if one caustic, the nitrate of silver, for instance, does not produce the desired effect, another more powerful, such as the acid nitrate of mercury, may; and that failing, a still more powerful agent, such as the actual cautery or caustic potash, will certainly succeed. This law—for law it may be termed—deserves a more general recognition in surgery than it has hitherto obtained, for it points out the true mode of treatment in many intractable forms of chronic inflammatory disease. It will be observed that I speak of the actual cautery in the same paragraph with caustic potash, the *rationale* of the action of these agents being identically the same.

In chronic ulcerative disease, the caustic should only be lightly applied, the object being merely to renew the surface of the sore. In chronic hypertrophy, the object in view is rather different. It is not the destruction of the hypertrophied tissues which is desired, but the production of a state of increased vitality, bordering on inflammation, in these tissues, under the influence of which they soften and melt. This result is produced by the mere formation and elimination of an eschar the size of a shilling, and a few lines in depth. It is certainly quite unnecessary to destroy any amount of diseased tissue, as has been recommended since I first introduced this plan of treatment; such a course greatly aggravates the importance and risk of the operative process, without any equivalent benefit accruing to the patient. If the softening and melting of the indurated and hypertrophied cervix does not take place entirely on the first application, it may be repeated several times on different regions of the cervix, at intervals of four or six weeks. Although a more tedious mode of proceeding, I am convinced that it is a more safe one than the extensive destruction at one sitting of the indurated tissues of the cervix uteri, advised by some of those who have adopted the practice.

It is, however, more especially when the caustic cylinder is passed into the cervical canal, in the treatment of inflammation of that region, that caution is necessary, and that I find it is not always observed. Inflammatory ulceration not unfrequently passes into the lower part of the cervical canal, and proves intractable to all ordinary means. Chronic inflammation of the mucous membrane and follicles lining the cervical canal, may obstinately resist all means of treatment,

owing, probably, to many of the diseased follicles being concealed between the sulci, or depressions existing between the rugæ of the arbor vitæ. In both these forms of cervical disease, I have recommended, as a last resource, a small potassa cum calce cylinder to be applied inside the os, to the diseased surface. Its action being more decided and deeper than that of iodine, the nitrate of silver, &c., it probably produces more energetic vital reaction, and reaches, moreover, the concealed follicles, which the other milder caustics do not. It is certain that I occasionally meet with cases of chronic inflammation of the cervical canal, otherwise incurable, both in my hands and in those of other physicians who have preceded me, which I am able to cure by this means, and this alone. I must, however, be allowed to repeat, that in my practice the use of potassa cum calce, especially in the treatment of inflammation of the cervical canal, is altogether an *ultima ratio*—a last resource, and not an ordinary mode of treatment. I may here also remark, that the views expounded by Dr. Tilt, in his paper recently read before the Medical Society of London, respecting the pathology of this form of uterine inflammation, do not essentially differ from those which I published many years ago, with the exception of what has reference to the uterine granulations described by M. Recamier, which I am not prepared to admit as of common occurrence. I must also add, that I quite agree with Dr. Tilt as to the value of the tincture of iodine applied locally to the cervical canal, in the milder forms of chronic inflammation. I have used it extensively for some years, and with great benefit.—*Lancet, July* 15, 1854, *p.* 26.

114.—*Use of Capsicum in Uterine Hemorrhage.* By Dr. Brock, Wellington.—[Dr. Brock seems to have had a very high opinion of this remedy, as he requested his executors to publish the following opinion in the various medical journals.]

Ample experience having taught me the very great value of capsicum in uterine hemorrhage, in doses of from five to ten grains every ten minutes until the hemorrhage ceases, I consider it my imperative duty to record my testimony to the effects of this remedy, which is not appreciated by the medical profession in proportion to its worth.—*Association Med. Journal, June* 30, 1854, *p.* 582.

115.—ON MENORRHAGIA.

By Dr. Edward Rigby, Senior Physician to the General Lying-in Hospital.

[A very common cause of menorrhagia is polypus. The following paper by Dr. Rigby is full of interesting information.]

Uterine polypi vary as to their size, structure, and the part of the organ from which they grow. It would be out of place to enter into

any detailed consideration of this subject; but I may briefly state, that the large polypi, which are usually of a fibrous tissue, not unlike that of the uterus itself, generally arise from the sides or fundus of the organ; while the small soft polypi, which consists mostly of cellular tissue, more or less condensed, and covered with mucous membrane, arise from the os and cervix. The larger polypi not unfrequently consist of that peculiar white, dense, semi-cartilaginous tissue, which forms the well-known "white tubercle;" or "fleshy tubercle of Baillie," the "fibrous tumour" of the present day. An isolated tubercle of this tissue has formed in the wall of the uterus, so near to the cavity of it, that, partly by its gradual increase of size, and partly it may also be supposed by the separation, and then by the contractions of the surrounding uterine fibres, it is at length dislodged from the part in which it was imbedded, and pushed into the cavity of the uterus, merely covered by the lining membrane, which, with more or less connecting cellular tissue and nutrient vessels, forms a pedicle. Hence we sometimes find in these polypi the same dense sub-cartilaginous tissue and white septa, which are seen in the common fibrous tumour of the uterus, and occasionally also the same calcareous deposits which this species of growth is known to present.

These larger polypi are usually solitary, but the smaller ones, which have been commonly called mucous polypi, and which have their attachment to the edge of the os uteri, or just within the cervix, generally occur two or more together, sometimes like a fringe, around the greater part of the os uteri. In some cases, these little growths appear to be of a hemorrhoidal character.

At first these smaller growths are of a vesicular character; they scarcely deserve the name of polypi, but rather of vegetations from the inner surface of the uterus, the nature of which have recently been successfully investigated by Professor Simpson, of Edinburgh. By the aid of sponge tents and the speculum, he has been enabled to demonstrate the existence of these growths during life, where all the ordinary means of examination had failed to detect them; and the entire cessation of the menorrhagia upon their removal has satisfactorily proved that their presence within the uterus had been the cause of it. They are decidedly the most common form of uterine polypus, and occur under a considerable variety of form and attachment, depending, I presume, on the amount of development which they have attained; thus in the early stage, they can merely be felt, as Professor Simpson has observed, "imbedded like shot or peas in or beneath" the mucous membrane of the cervical canal, while in a more advanced state they present the appearance of small, soft, semi-transparent bodies, of a pale red colour, attached by a slender pedicle, which is frequently long enough to let them hang loosely in the vagina, and varying in size from that a hemp-seed to a cherry. I scarcely think that the denomination of "vesicular" or "cystiform" applies to these growths, because, although soft, they are distinctly solid, possessing no cavity, but con-

sisting apparently of fine cellular tissue, covered by a delicate expansion of mucous membrane, which, with the nutrient vessels, forms the pedicle, as is the case with the larger polypi of the fibrous tumour, or subcartilaginous character.

One of the earliest symptoms leading us to suspect the presence of a polypus, is the irregularity and profuseness of the catamenia, which occurs without our being able to assign it to any of the numerous causes of menorrhagia which I have already been considering. The patient at first scarcely notices the change; but as the irregularity and profuseness of the discharge increases, her health begins to suffer, and this at last drives her to consult a medical man, so that when at length an examination is made, the polypus has usually attained a sufficient bulk to be easily detected.

Of course there are endless varieties as regards the amount of the discharge, its effects upon the patient, and the time the polypus takes to present at, or press through, the os uteri. It is a well-known fact, that small polypi may exist for a considerable length of time without producing menorrhagia; but these must be looked upon as exceptions to the general rule, and not invalidating the remark I have already made, that increasing irregularity and profuseness of the catamenia, in the absence of any evident and assignable cause, justifies the suspicion of polypus.

The symptoms of polypus depend very much upon the size and situation of the tumour; as before said, the earliest are those arising from the uterine irritation which their presence causes; the uterus becomes congested, the catamenia profuse and irregular, frequently soon returning after a long and exhausting attack of menorrhagia; or there is a constant sanguineous discharge, only interrupted by short and irregular intervals, with more or less leucorrhœa between.

If the polypus be of a species which will attain a considerable size, it gradually distends the uterus, and, by preventing that amount of contraction which closes the mouths of the vessels opening upon its internal surface, adds another cause of hemorrhage to that which already exists.

The health and powers of the patient soon flag under this continued drain; she becomes pale, feeble, and cachectic; the digestive organs are deranged, she has pain of the back, sense of weight and dragging about the hips; she finds that the hemorrhage is daily brought on more and more easily, until she is seldom free beyond a few hours, and then, perhaps, only when she preserves the horizontal position. "As the polypus grows larger" says Dr. Gooch, "it gradually dilates the uterus, till at length this organ, stimulated by its bulk, begins to contract upon it, protruding it through the dilated orifice. The polypus sometimes passes through the orifice gradually and insensibly, sometimes suddenly during the action of the bowels. I have known several instances in which patients, after this action, have been suddenly seized with retention of urine, and, on examination, a polypus was

found in the vagina, compressing the urethra."—*On some of the Most Important Diseases Peculiar to Women.*

When once this change has taken place, the circulation of the polypus becomes a good deal impeded by the pressure of the os uteri which encircles it ; the mass swells ; large varicose veins, much distended with blood, begin to ramify over its surface, and give rise to severe hemorrhage by bursting either from over tension or the effects of ulceration.

From the foregoing account, it will be evidently of the greatest importance to detect the presence of a polypus at as early a period as possible before the patient has suffered much from the continued irritation and menorrhagia.

It is to Professor Simpson, of Edinburgh, that we are indebted for a masterly paper "On the Detection and Treatment of Intra-Uterine Polypi," in which he has pointed out the great value of dilating the os uteri with sponge tents, for the purpose of exposing and operating upon polypi which are still within the uterine cavity.

On examination of a polypus at an early stage, when it has not attained such a size as to press upon, still less to dilate, the os uteri, we find the os and cervix somewhat swollen, and the uterus itself more bulky than natural, very much as it is just before a catamenial period. Occasionally a careful examination with the uterine sound, if it be of the larger kind of polypus, will assist our diagnosis ; but it usually happens, that we have no other evidence than what can be inferred from the character and history of the patient's symptoms, amounting merely to a suspicion of the case, the true nature of which can only be cleared up by dilating the canal of the cervix with a succession of sponge tents, and then examining the uterine cavity with the finger or the speculum.

If the polypus be one of the larger kind, it begins to press upon and dilate the os uteri internum. The cervix shortens, the lower segment of the uterus becomes evidently more bulky, the os uteri externum (os tincæ) loses its lip-like form ; it becomes more circular, and is now sufficiently yielding either to allow the polypus to present, or at any rate to admit the tip of the finger to be insinuated far enough to feel it. A little careful manipulation will dilate the os uteri sufficiently to allow the finger to pass completely round the tumour. This will show us that its attachment is higher up, the distance of which will be, to a certain degree indicated by its greater or less mobility. There is no doubt but that the uterus (in the same patient) varies greatly in size at different times, even from one day to another, depending on the congestion produced by the amount of exercise she may have used, by the period of the catamenial interval, the state of the bowels, or on the condition and tone of the patient's health, &c. ; so that we frequently find, in cases of polypus at an early stage, a considerable difference in the results of two examinations, although there has been not more than forty-eight or perhaps even twenty-four hours' interval between

them. The os uteri may have become more closed, the uterus itself more contracted, so that what was easily felt by the finger at the first examination is quite out of reach at the second.

As regards the treatment of these cases, it will be guided by the nature of the polypus. The small mucous polypi of the os and cervix are easily snipped off with the common tonsil scissors, which may be made long and slender, to use through a speculum where necessary. In many cases, these growths are so small, and hang by means of their slender pedicles so loosely in the vagina, that they elude and puzzle the finger, especially if there be more than one of them, as is usually the case. It is far better to have the assistance of the speculum here; the more so, as there are generally one or two smaller growths, which the scissors can scarcely get hold of, and which may be twisted off or crushed with a forceps; moreover, it will be desirable that nitrate of silver should be freely applied to the part afterwards. The little vesicle-like growths which Professor Simpson has described upon or beneath the membrane lining the cavity of the uterus, and chiefly seen in the lower part of the organ, may be picked off with a forceps, or even by the finger-nail.

With regard to the larger ones, I prefer the ligature, as being much safer than cutting them off, by which I have seen severe hemorrhage produced. The fine hempen cord which Mr. Ferguson, the well-known instrument-maker, procures for this purpose, is far superior to any other species of ligature which I have used.—*Medical Times and Gazette, Oct.* 28, 1854, *p.* 437.

116.—*Hearder's Condensed General and Obstetric Electro-Galvanic Machine.*—[The great objection to many improvements is that they are not *handy*. The busy practitioner cannot get through a good round of patients unless his remedies and appliances are ready for him. Consequently he neglects many of our best applications, and electricity amongst the rest. This, however, need not now be the case, since the introduction of Mr. Hearder's electro-magnetic machine.]

In its present form, it seems impossible to carry compactness and convenience to a higher point. The range of power of the instrument is so extensive, as to be more than equal to any therapeutical object. This power admits of the nicest and easiest graduation. The instrument is furnished with two sets of discs, of different sizes, and with a uterine conductor. Whilst its adaptation to obstetric emergencies is perfect and peculiar, it is equally fit for general medical purposes.

To give an idea of the compactness of this instrument, we may state that the length of the box which contains it, together with every requisite, including a bottle of dilute acid, for use, is seven inches, depth seven inches and a half, and the width less than eight inches. When arranging it for use it is not necessary to remove the coil or the battery from the box. The ingenuity displayed in getting rid of every

superfluous complication or incumbrance, in reducing the essential parts to the narrowest space, and in attaining the highest degree of effectiveness and readiness of preparation, is perfectly surprising. No other machine we have yet seen approaches the elegant machine of Mr. Hearder, in the combination of those qualities.—*Lancet, June* 24, 1854, *p.* 670.

117.—*Cancer of the Womb.*—Mr. Lloyd has long employed in cases of cancer of the vagina or uterus which have come under his care in St. Bartholomew's, injections of arsenical solutions for the purpose of preventing fetor. He states that such treatment is perfectly innocuous, and that it succeeds far better than the ordinary disinfectants, which at the best are but of very temporary benefit, the smell generally returning as bad as ever quickly after their employment. The strength of the solution used is from two to eight grains of white arsenic to the pint of water. The great difference between the chemical disinfectants and such applications as this, no doubt arises from the circumstance, that the one only destroys fetor, while the other prevents it. The extraordinary influence of arsenical applications in cleaning cancerous ulcers is well known to those who have tried them. It is not necessary that they should be made to act as escharotics, since repeated dressings with a paste only strong enough to stimulate will effectually serve the end. The following prescription is that of the powder used by Mr. Startin at the Hospital for Skin Diseases for the purpose mentioned, and it differs, we believe, not very materially from one which was a great favourite with Dupuytren:—

℞. Hydrarg. chloridi ʒiiss.; hydrarg. bisulphureti ℈ij.; acidi arseniosi ʒj. Misce.

This powder, made into a paste with water, is more or less lightly, as required, to be brushed over the sore, the application being repeated once a week, or fortnight, or month, as may be necessary. Mr. Lloyd's injection, in all probability, acts in the same manner on the sloughy, cancerous ulcerations concealed within the vagina. It must be borne in mind some real good is probably produced in addition to the prevention of fetor, since the diminution of discharge and sloughing will save the patient's powers, and perhaps, also, somewhat retard the growth of the cancer.—*Med. Times and Gazette, July* 1, 1854, *p.* 11.

118.—*On Uterine Polypus, its Nature, early Detection, and Treatment.* By Dr. Robert Barnes.—[Dr. Barnes brings forward some interesting cases of polypus uteri as introductory to some more general remarks. It is easy enough to find out and treat a polypus which has descended into the vagina. The difficulty is to form an accurate opinion about one which is still small and out of sight and

touch. It is, therefore, during their early stage of formation, before they have cleared the os uteri, to which Dr. Barnes particularly draws our attention.]—*Lancet, June* 10, 1854, *p.* 613.

119.—ON POLYPI SPRINGING FROM THE MUSCULAR WALL OF THE UTERUS.

By Dr. Robert Barnes.

[Dr. Barnes says that little has been added to the observations of Vogel on this subject.]

Not only was the muscular character of the fibrous tumour of the uterus clearly ascertained by that eminent pathologist from the examination of tumours taken from both unimpregnated and puerperal uteri, but he appears to have arrived at a higher and more general law—namely, that many fibrous tumours developed in the organic muscular structures of other organs, as well as the uterus, are likewise muscular. I think, then, it may be concluded that the so-called fibrous tumour of the uterus, is in reality a muscular tumour: and there can be no doubt that the so-called fibrous polypus is nothing more than a fibrous tumour of the uterus, which in the course of development, or in some cases, as the result of an effort of elimination, is made to project into the cavity of the organ, preserving only a pedicular attachment. Dr. Lee cites Dr. Sims as describing the progress of these tumours of the uterus in the following manner:—1st, If they happen to be developed in the centre of the muscular wall they grow there; 2nd, If near the outer wall, they expand into the cavity of the abdomen covered by the peritoneum; 3rd, If near the mucous surface, then they project into the uterine cavity, protruding before them a layer of muscular tissue, so that the neck of the tumour would be formed by a portion of the substance of the uterus. Boivin, Dugès, Breschet, and other pathologists, have entertained the same view.

The frequency of Fibroid Tumours and Polypi.—The identity of structure of the fibroid tumour and the uterine muscular tissue, offers the readiest explanation of the great frequency of fibroid tumours. Bayle has observed that out of 100 women who had died after the age of thirty-five years, in twenty, tumours of this description were found in the uterus. This frequent occurrence of fibroid tumours gives strength to the presumption that fibroid polypi also are more common than is perhaps suspected.

The Mode in which Muscular Tumours become converted into Polypi is a subject of considerable interest. The first appearance of a polypus has frequently been observed immediately after delivery; and the history of many of these cases leaves no room to suspect, or at any rate affords no distinct evidence to justify the conclusion, that a tumour of a polypoid form existed in the cavity of the womb prior to

delivery. It appears to me that the process of extrusion of a solid-tumour from the walls of the uterus into the cavity, admits of a satis factory explanation.

The anatomical identity of these tumours with that of the muscular walls of the uterus, renders them susceptible of the same influences that act upon the uterus itself. Under the stimulus of pregnancy, the same developmental activity will be imparted to both. It has accordingly been repeatedly observed that these tumours grow with great rapidity during gestation, and that they become diminished in size after delivery. The latter process, however—that of retrocession—seldom, perhaps never, takes place to an extent proportionate to the diminution of the normal muscular fibre of the uterus. The texture of the tumour is usually more dense and compact than that of the uterine walls, and consequently less capable of contraction. The process of extrusion depends mainly upon two conditions—1st, The difference in the degree of density of the proper muscular tissue of the uterine wall and of the contained tumours; 2nd, The contractile efforts of the uterus. When a tumour of greater solidity than the proper uterine tissue is embedded in the walls of the uterus, it will almost necessarily be thrust outwards or inwards when the uterine walls contract upon it. It cannot follow or partake in the uniform contraction of the organ; as an unyielding body, preserving to a great extent its original dimensions, it must be driven towards one or other surface of the uterus as this diminishes in size. An attentive consideration of the history of many cases in which polypi has first been observed to come down immediately after delivery, amply confirms this proposition. Not to encumber this essay with unnecessary cases, I refer to the account already quoted of the case of Dr. Crisp.

Previously to parturition there was no suspicion of a polypus in the womb. After the birth of the child, and the removal of the placenta, then some other substance, which Dr. Crisp at first thought might be a second child, was felt. At a later period, violent expulsive pains continuing, Dr. Chowne discovered a mass in the womb, now distinctly polypoid in form. Energetic action of the womb still going on, the polypus was next forced low down in the vagina. The dense structure of this polypus is especially attested both by Dr. Oldham and by Dr. Bristowe.

This process, by which the uterus endeavours to cast off a tumour after delivery, merits the careful attention of the obstetric practitioner It is not difficult to imagine a case, in which the extrusion of the tumour may be less complete than in the above case of Dr. Crisp. The tumour may be retained in the uterine cavity, where its existence may not be suspected. Its presence there may be the occasion of long-continued and even fatal hemorrhage.

That the process by which a muscular tumour, in an unimpregnated womb, assumes the polypoid form is sometimes similar to that just described, is exemplified in the first case of Professor Vogel. It can

hardly be doubted that the presence of the tumours in the walls of the uterus was the cause of the violent contractions, simulating labour-pains, which in all probability brought about the extrusion of one of these bodies into the cavity of the womb. In this instance the contractions had actually effected the entire detachment of one tumour, which was found lying free in the cavity. Another step, and it might have been expelled from the body altogether.

The process of extrusion is further facilitated by the slightness of the attachments by which these muscular tumours are connected with the uterine walls in which they are imbedded.

It is certain, however, that uterine tumours, when they become polypi, do not do so, in all cases, under the agency of active uterine contraction. Sometimes this takes place as the result of the different ratio of growth of the tumour and of the uterus. A dense, solid substance, isolated from the uterine wall in which it is imbedded, and continuing to grow, whilst the uterus itself partakes but slightly in the process of enlargement, will in time form a projection upon one or other surface of the organ. A further stage of growth will cause it to bulge more and more prominently, until it acquires a distinct polypoid form.

It is worthy of remark that fibrous tumours are very rarely found before the age of puberty; if they are, they remain passive until the period of activity of the generative system. After the child-bearing period, and the cessation of menstruation, fibrous tumours previously existing exhibit a marked tendency to recede. It is, I believe, a very rare occurrence to observe that any fresh tumours become developed after this period. This period of active growth of fibroid tumours and polypi is the period of functional activity of the generative organs. The periods of greatest activity of growth of these tumours are the periods when the generative organs exhibit the greatest activity. The periodical stimulus the uterus undergoes at the epochs of menstruation is shared by the tumours lodged within its walls. The rapid enlargement of the uterus during pregnancy is attended by an at least commensurate growth of the tumours.

But, although it may be laid down as a general rule, that fibroid tumours do not continue to grow after the termination of the normal period of menstruation, it must be admitted that exceptions occur. I have even observed that the constitutional ferment which frequently attends this critical period of life seems to determine in the temporary exacerbation of any form of uterine disease existing at the time. The organic force which had hitherto been exerted in healthy physiological processes is now suddenly diverted, and expended in a pathological direction. The disposition to floodings under these circumstances is often greatly increased. The greatest care is necessary in order to carry the patient over this stage of peculiar danger, and to gain in safety that point when the commotions of the critical period shall have subsided.

The Degeneration of Polypi.—These muscular tumours and polypi ont unfrequently undergo a process of retrocession, or even of degeneration. In the case of tumours which have enlarged simultaneously with the gravid womb, the retrocession that takes place is probably effected by the same process of fatty degeneration of the newly-developed fibres, which Mr. Rainey has described as taking place in the proper muscular structure of the uterus. It has been supposed that fibrous polypi are liable to become converted into scirrhus or cancer. It can hardly be admitted that the abnormal muscular growth of which they are composed is more liable to such a change than is the normal muscular structure of the womb. A muscular fibre cannot be changed into cancer. It may, however, give place to it. It is quite possible that the cancer element may be developed in the substance of uterine tumour, as it may be in the proper substance of the uterus; and that the activity of the new growth may cause the atrophy of the old, and the gradual substitution, not conversion, of a cancerous tumour for a benignant polypus.

In muscular tumours and polypi of long standing, the vessels often become very scanty, or disappear. Their entire structure sometimes undergoes an earthy or bony degeneration. In this condition, hemorrhages which had attended the earlier stages of their growth often cease. They seem to be removed by this change from the sphere of organic activity, and excite little or no irritation in the organs with which they are connected.—*Lancet, July* 1, 1854, *p.* 687.

120.—ON UTERINE POLYPI AS THE CAUSE OF HEMORRHAGE.

By Dr. Robert Barnes.

[In all cases of uterine hemorrhage where we cannot find out any constitutional cause, nor local disease, it seems evidently our duty to ascertain if polypus uteri does not exist. Out of thirty cases of uterine hemorrhage, when all other causes were excluded, Dr. Barnes found eight cases of detected polypus, eight cases of enlarged womb, and fourteen cases of tumours of the womb: so that the cause of the hemorrhage in all these cases was beyond tactile or visual examination. Dr. Barnes proceeds to say:]

Before considering the physical means of following up this search, I wish to point out one symptom which may furnish an useful indication. When the uterus contains a foreign body, even of small size, it rarely happens that contractions are not excited—that efforts are not made to expel it.

The occurrence, then, of spasmodic intermitting pains, resembling those attendant upon abortion or labour, together with globular enlargement of the womb and hemorrhage, point, under the exclusive

conditions premised, with a high degree of probability, to the presence of a polypus.

It must, however, be admitted, that the general symptoms can furnish at best but presumptive evidence. In the case of pregnancy, which is attended by general signs of a marked character, no practitioner of experience undertakes to base an absolute opinion upon the general signs alone. He looks for the direct physical evidence afforded by *ballottement*, the placental rush, or the sound of the fœtal heart. In the case of polypus, the general symptoms can never rise to that point of distinctness which is usual in pregnancy; the necessity, therefore, of seeking for direct physical evidence is still more imperative.

The Physical Means of detecting Polypi.—It may be that the polypus has descended so low down as to be on the point of escaping through the os uteri. In this case it may. under favourable circumstances—that is, during the relaxation and forcing down attendant upon an attack of flooding—be perceived by the finger. Its detection is even more probable by the use of the bivalved speculum, which, by expanding, opens the os, and permits the inspection of a certain portion of the cervical canal. The uterine sound is also available in further opening the os. An observation of Dr. Locock's clearly expresses the importance of making the examination during the existence of the hemorrhage. He says—"I never discovered the polypus in these cases when I examined the uterus in the intervals between the attacks of hemorrhage, either by the finger or speculum. The os uteri closes in the intervals of the attacks. The tumour comes down during hemorrhage." It has occurred to me in several instances to have observed a polypus at one examination, which could not be detected on a subsequent occasion.

Another cause that may help to conceal a polypus in the cervix, is the congestion and swelling of the os, induced by the irritation caused by the polypus, or arising from independent circumstances. This condition may be removed by appropriate treatment, and when the os has been restored to its natural state, the polypus may be brought into view.

The Uterine Sound.—As a means of extending tactile perception beyond the point which it is possible to reach by the finger, the uterine sound is in some cases a most valuable instrument. By its means it will generally be possible, in cases where the os and cervix are sufficiently open, to determine whether or not a movable body be present in the uterus.

Should our conviction or our presumption, derived from the evidence of the uterine sound or from other sources, be so strong, that a polypus is present in the cavity of the womb, we possess means of bringing it into view. By causing contractions of the womb the contained body may be expelled. The ergot of rye has been used for this purpose, and no doubt sometimes with success; but I greatly prefer the agency

of *galvanism*, as being both more safe and more efficacious. Dr. Tyler Smith has already applied galvanism in one instance for this purpose, with complete success.

Dupuytren recommended the practice of opening the cervix in these cases by *incisions*. Although I can conceive a case in which this operation may be justifiable, I believe that the necessity for resorting to it must very rarely occur, since we possess another means of effecting the object in view, with as much certainty and with less danger.

The plan of *dilating the os and cervix uteri* by means of sponge-tents, proposed by Professor Simpson, finds, in cases of this description, its most valuable application. The use of two or three graduated sponge-tents in succession will mostly succeed in opening up the canal of the cervix to an extent sufficient to admit of a perfect exploration by the eye and the uterine sound of the cavity of the uterus.

I am aware that the proposal to use sponge-tents, for the purpose of dilating the os uteri, has met with considerable objection. It has been urged that such a procedure may cause inflammation and other serious consequences. It does not appear to me that these objections are substantiated by experience, or by sufficient reason. Sponge-tents have been long employed for the purpose of inducing premature labour. Dr. Lee has sanctioned by his example their use for this purpose. The state of the cervix during early pregnancy does not differ widely from that of the cervix when an intra-uterine polypus exists. When a polypus is present, under the influence of the attendant hemorrhage, leucorrhœa, growth of the tumour, and action of the uterus, the cervix is already disposed to relax and to expand; and it does not seem reasonable to apprehend that the presence of a soft piece of sponge in the os uteri should be more hurtful or dangerous than the often-times far greater pressure exerted upon the cervix by a polypus. Under many circumstances, of not greater urgency, that occur in obstetric practice, those physicians who express so much dread of the possible effects of the sponge-tent, do not hesitate to enjoin the violent expansion of the uterine neck by the hand.

To exclude this application of an agent which experience has proved to be both safe and effectual, is, in effect, to pronounce—in the case of an obscure disease, situated higher up than the os uteri, however threatening to life—that the resources of medicine are exhausted, and that the patient must be abandoned. To urge, as it has been urged, that if you wait long enough, the polypus, if present, will not fail to make its way into the vagina, is to advocate a delay that may be fatal. The treatment, by expectancy, is surely inappropriate when an uncontrollable flooding is fast destroying the patient.

M. Jobert de Lamballe has recently contrived an *intra-uterine speculum*, which may possibly be of service in assisting the visual examination of the uterine cavity and the cavity of the cervical canal. This instrument consists of a hollow cylinder, and a long stem to fit; the circumference is so small, that it can be passed into the uterine

neck, the os uteri being previously brought into view by the ordinary speculum. By the withdrawal of a slide attached to the stem, the cylinder may be converted into a groove, so as to permit of an inspection of any part of the canal. [See page 282 of this volume.]

I cannot speak of this instrument from experience. Possibly its utility may fall short of the expectations of the inventor. Its employment would be facilitated by the previous expansion of the uterine neck by means of the sponge-tent.—*Lancet, July* 29, 1854, *p.* 79.

121.—CASE OF INTRA-UTERINE POLYPUS.

By Dr. Robert Barnes.

[The following case is a good one to illustrate some of Dr. Barnes' views of treatment of this disease.]

In the night of the 3rd of August, my colleague, Dr. Ramskill, was called to see a young woman who was suffering from uterine hemorrhage. The history of the case is briefly this: the patient was twenty-six; she began to menstruate at the age of fourteen, and this function was performed very regularly until her marriage, eight months ago. From that time she has suffered almost perpetual hemorrhage. A month ago, the flooding was so profuse that it was thought that she had miscarried. Since then there have been slight occasional intermissions, but her health was deeply impaired. When Dr. Ramskill was called the hemorrhage had returned. He observed strong bearing-down, expulsive efforts. The patient died the same night in convulsions, evidently from loss of blood.

The body was examined by Dr. Ramskill on the following day. The organs were all healthy. There was no abdominal inflammation. The os uteri was healthy, but flaccid; it was filled with a fresh clot. There was also blood in the cavity of the uterus. The larger portion of the uterus, with a body adhering to the inner wall, was forwarded to me by Dr. Ramskill.

I subjected the parts to a careful examination. The walls of the uterus were dense, pale, somewhat thicker than natural, and the whole size of the organ somewhat larger than the normal unimpregnated womb. There was no tumour or other abnormal condition of the muscular wall, but attached to the inner surface near the fundus, and altogether enclosed within the cavity of the uterus, was a tumour of the size of a small walnut. The tumour did not reach to the uterine neck. The mucous membrane of the cavity was stretched over it. It was connected by a broad basis to the uterus, but would have admitted of isolation by ligature. The apex, or most projecting part, had undergone partial disintegration; it was a little broken up, softened, and had evidently quite recently been the source of hemorrhage. Examined by the aid of the microscope, the substance was found to consist of nucleated fibres, the nuclei being large and distinct. Portions,

especially those taken from near the apex, exhibited abundance of oily globules and numerous blood-globules. The structure of the tumour differed from that of the uterine wall in this respect only, that the fibres in the latter were longer, narrower, and more densely interwoven, and the nulcei less distinct. There was no evidence of fatty degeneration in the fibres of the uterine wall. There was no doubt greater developmental activity in the tumour than in the uterus.

The practical deductions from this case are of the highest interest and importance.

1. The condition of the uterine muscular walls leads me to conclude that the conjecture that the patient had aborted a month before her death was erroneous.

2. The comparative indolence of the tumour, and the absence of any remarkable amount of hemorrhage up to the period of marriage, and the constant floodings following immediately upon that event and continuing until the death of the patient eight months afterwards, forcibly illustrate the influence of ovarian and uterine stimulation in developing the growth of uterine polypi.

3. The case is peculiarly one of that class to which I have pointed as strongly indicating the necessity of exploration beyond the os uteri. In this instance the os uteri was found healthy; there was no obvious sign of local disease to explain the hemorrhage; the bulk and weight of the uterus were rather above the normal standard; the figure of the organ was regular. Everything pointed to the uterine cavity as the seat of the cause of the hemorrhage. It is, in short, the type of the class of cases in which the dilatation of the uterine neck is indicated.

4. The operative proceeding which in my opinion would have been the means of rescuing this poor woman from bleeding to death, is the following: repeated doses of ergot of rye, and the application of galvanism to aid the natural efforts of the uterus to effect the scission and expulsion of the tumour; and the dilatation of the uterine neck by sponge tents. By these means combined, no long period would have elapsed before the tumour would have been brought into view. If it had been then found difficult to encircle the neck of the tumour with a ligature, the operation might have been facilitated by bringing the tumour lower down by the aid of a tenaculum. In the present case, I believe the tumour admitted of being so removed. But we may imagine a case where ablation would not have been expedient or possible. In such a case the local application of the acid nitrate of mercury, potassa fusa, or the actual cautery might have been justifiably resorted to in order to arrest a hemorrhage that was fast hurrying the patient to the grave. Such an application might also cause the destruction of the tumour by disintegration or degeneration.

5. The softening and partial breaking up of the tumour observed after death suggests to me that the microscopical examination of the discharges might have detected some of the constituent nucleated fibres of the tumour, and have aided the diagnosis.

6. I would finally remark, in answer to those who deprecate any operative interference with polypi that have not yet made themselves visible at or below the os uteri, that the intervention of surgical aid is not indicated by the mere position of the polypus, which is altogether unimportant, but by the terrible attendant hemorrhage, no matter where the polypus may be. If this be so, and surely the proposition cannot be disputed, then it follows that the removal of an intra-uterine polypus may be as urgently called for as the removal of one that has descended into the vagina.

In the case of an abortion, or of the retention of a portion of placenta, no obstetric practitioner is ever satisfied as to his patient's safety until the offending substance is removed from the uterus. Why should the patient be abandoned when the offending substance is a polypus? —*Lancet, August* 26, 1854, *p.* 168.

122.—ON DIEFFENBACH'S LOOP SUTURE.

By T. Spencer Wells, Esq.

[In his practical essays on Plastic Surgery, Mr. Wells points out the different kinds of sutures which are used such as the *quill* suture, the *clamp* suture, the *bead* suture, and the *lead* suture, but we wish more particularly to draw the reader's attention to Dieffenbach's *loop* suture, for the closure of fistulous openings.]

The *subcutaneous* or *loop* suture is an admirable contrivance of Dieffenbach, for the closure of circular fistulous openings. It is especially useful in cases of salivary fistula, fistula of the male urethra—vesico-vaginal, recto-vaginal, and vesico-rectal fistulæ—intestinal fistula, and preternatural anus, all of which have been healed by the skilful application of this suture after every other mode of treatment had proved unsuccessful. The edges of the fistula having been prepared for union by paring, cauterisation or blistering, the patient is ready for the application of the suture, the description of which I shall quote from Dieffenbach :—

"A sewing needle very much curved, charged with a single thread, and held near the eye sideways by a pair of needle forceps, is pushed through the skin at some distance from the opening to be closed, the edges of which have been previously inflamed by cauterisation, or pared away. Then the needle is carried beneath the skin in the subcutaneous cellular tissue for some extent, always keeping at an equal distance from the opening, so that a quarter or one-third of a circle is described. Then the point of the needle is directed outwards, the skin transfixed from within outwards, and drawn with the thread some inches out. Then the needle is returned through the same opening beneath the skin, another quarter of a circle is made below, the needle again brought out and carried a third or fourth time beneath the skin, until the whole opening is surrounded at an equal distance by the

thread. At last the needle comes out through the first point of puncture, and as the thread hangs out a finger's length from the opening, so by means of the other end, still in the eye of the needle, a tying together of the circular ligature can be effected. If the opening is small, and the thread lies near it, it may be tied moderately fast together by two knots, but much looser than when a large artery is tied. The knot lies upon the opening of the needle puncture, and generally sinks within it. The ends are now somewhat shortened, and the opening, if the edges are torpid, is smeared with tinct. cantharides; otherwise they are covered with strips of plaster, in order to assist the subcutaneous process of agglutination, and prevent the entrance of air by the needle punctures.

"When large openings or fistulæ have to be closed, for example in preternatural anus, into which a finger can be introduced, the same ligature is applied in an enlarged manner. In a narrow urinary fistula, I take a single fine thread, and a fine curved needle; introduce it at the most two lines from the border; but in the other case I use one of the largest sewing needles, and a very thick waxed silk cord, of four, six, to eight thick silk threads, and carry this an inch distant from the opening around it, until the thread is again brought out by the needle at the first point of puncture. In order to avoid rapid cutting through of the soft parts, to which no union would follow, it is advisable only to draw the ends of the thread so strongly that they gently press the walls of the opening. To do this, a round piece of cork, notched in the middle on one side, is laid between the two ends of the ligature, a knot is made in the notch, and then a bow, to be tightened afterwards. This is done after some days have passed, when the ligature has become loose.

"Small fistulous openings sometimes close after the first suture. The dressing is first examined on the fourth or fifth day. If the thread is firm, it is left for eight days, and it is better to withdraw it too late than too soon. This is done just as a common suture is withdrawn the end of the threads being stretched, and the ring cut through with fine-pointed scissors in the enlarged needle puncture, and the ligature carefully drawn out.

"In large openings, every two days it is tied a little tighter, even if the closure has not followed, but always with great delicacy, so that the thread does not cut through for at least fourteen days or three weeks. In the most successful, or tolerably successful cases, the thread must not be removed too early. Even where it has cut through all the surrounding parts, the irritation set up in the edges and parts around produces considerable diminution in the opening, partly by the contracting cicatrices of the edge, partly by the constricting subcutaneous adhesion of the parts cut through by the thread.

To the application of this suture I owe many cures which resisted every other treatment. Treatment by this method is often a trouble-

some undertaking, requiring frequent repetition; but it has the advantage that each failure, not like the carrying away and suppurating through of the common or twisted suture, is not a true failure, but only a partial success, and a step forward towards the goal. Therefore the operation is repeated until the opening is perfectly closed."—*Medical Times and Gazette, July* 29, 1854, *p.* 109.

123.—*Painless Labour.*—Mr. Cousins was called, on October 13th, to a lady, aged twenty-six, eight months gone in her first pregnancy, who had been exerting herself during the day preparing for a dinner-party. At half-past five p.m., a sudden gush of liquor amnii took place, carrying down the funis of a child, this was replaced, but again descended in ten minutes; it ceased to beat, and the os uteri being readily dilatable, Mr. Cousins turned the child. No sensation of pain had occurred until this operation, which gave rise to some slight suffering: the child, a small one, was easily expelled by the expulsive efforts of the uterus: throughout this there was no pain besides that described above. When asked during the uterine contractions, she averred, without any falter of voice, that she felt no pain whatever. She gave directions which were required, and sustained an easy flow of conversation. Mr. Cousins watched the descent of a second child, a healthy, strong boy, the passage of whose shoulders *alone* caused pain: during the uterine contractions, she, now that her attention was aroused, "felt, as it were, a band pressing about her," but nothing more; and she recollected that, for twelve hours before she sent for him, she had more than once remarked to a servant, "how tight she felt all at once." Throughout the day the characteristic mucus had been abundant.—*Lancet, Nov.* 4, 1854, *p.* 387.

124.—ON SOME AFFECTIONS OF THE RECTUM CAUSED BY CERTAIN CONDITIONS OF THE WOMB.

By I. B. Brown, Esq., London.

Displacement forwards or backwards, and enlargement of the the uterus, from whatever cause, whether pregnancy, hypertrophy, inflammatory engorgement, distension by fluid or by hydatids, polypi, or scirrhus, or any other disease, alike tend to injuriously affect the rectum.

As displacement may occur without enlargement of the uterus, it may operate singly in inducing rectal disease; but more often the two conditions concur, and it is then chiefly that the mischief is so considerable. The evils, too, will be greater when, with retroversion, engorgement of the body of the uterus, and with anteversion, that of its neck, go together. On the other hand, enlargement, without deviation of the womb forwards or backwards, may, and oftener does,

act singly in provoking disease of the rectum, than either of these displacements does without it.

The conditions of the uterus under consideration act on the rectum injuriously in two ways: first, by mechanical pressure; and, second, by inducing vascular disturbance like that present in themselves. An enlarged uterus drags on its lateral ligaments, elongates them, subsides lower down in the pelvis, and so comes to press on the lower bowel, to interfere with its muscular action and the circulation through its bloodvessels, and to irritate its mucous lining. At the same time any hyperæmic state of the uterine vessels causes an increased fulness of the hemorrhoidal, and a determination of blood to them. Thus, by reflecting on the anatomy of the parts, it will easily be understood why and how diseases of the rectum, such as hemorrhoids, prolapsus, fissure, stricture, fistula, as well as disordered functions of the bowel, as constipation, dysenteric irritation, &c., do sometimes result directly, either from the mechanical pressure of an enlarged uterus, or simply from the derangement of the hemorrhoidal circulation, resulting from uterine disease.

[The following case illustrates Mr. Brown's practice.]

Case.—L. C., aged 31, unmarried; had suffered for several years from three or four large piles, which, she stated, protruded in the act of walking, and also created great uneasiness in the sitting posture. Every three or four weeks she lost a considerable quantity of blood from them. Her bowels were seldom opened more than once in three or four days, and then only from taking some aperient. After each defæcation, she had always increased inconvenience and pain. She suffered much from indigestion, headaches, and general lassitude. I first enquired as to the menstrual function, and found that, although she was generally regular every four weeks, the quantity was very small, and the discharge seldom continued more than one day, and that, at this time, she generally lost a considerable qnantity of blood from the hemorrhoids. On making a digital examination per vaginam, I found the uterus enlarged and painful to touch, and lower in the vagina than normal. I directed that three leeches should be applied to the os uteri, and that the bleeding should be encouraged by a hip-bath immediately on their removal; that the bowels should be freely opened by a saline aperient; and that this treatment should be pursued once a week. She was further directed to take twice a day the sixteenth part of a grain of the bichloride of mercury, and her diet was ordered to be simple, nutritious, and unstimulating. The result of these measures was, that at the next menstrual epoch there was a more copious uterine discharge, and an absence of bleeding from the hemorrhoidal vessels. The same treatment was continued for another month, and resulted in an improvement in menstruation, both in quantity, and in the duration of its flow; the uterus had much decreased, being nearly of its normal size, and not painful to touch. I now considered

it advisable to remove the hemorrhoids, which I did by passing a ligature of twine round the base of each. I then placed the patient in bed, giving her a grain of opium every four or six hours, for the purpose not only of relieving her from pain, but also of constipating the bowels till the ligatures should come away, which they did in five or six days. The case progressed satisfactorily and the patient returned to the country perfectly recovered.

This case presents some striking practical facts, which serve to illustrate my preliminary remarks.

1. The bleeding from the hemorrhoids at the menstrual epoch. It is a fact that hemorrhoids are always more troublesome at the time of menstruation, because more blood is circulating through the blood-vessels of the rectum as well as of the uterus; and, if there be any obstruction in the uterine vessels to prevent the menstrual flux, then the hemorrhoids often bleed freely.

2. The enlarged and inflamed uterus, with the absence of the menstrual flux.

3. The great relief afforded by the antiphlogistic treatment.

4. In ligaturing the hemorrhoids I prefer *twine*. Its advantages over silk are very marked:—first, in procuring a quicker separation of the tumour; and, secondly, in causing less pain to the patient. It will also be observed, that I preferred the ligature to the scissors in the removal of these tumours, acting upon the golden rule laid down by my old and esteemed friend, Mr. Copeland, in all operations upon the rectum, "*to cut skin, and tie mucous membrane.*" I am also indebted to the same gentleman for the practical hint to prefer the use of the vegetable product—twine, to that of the animal product—silk.

I think it is not too much to assert, that had I at first devoted my attention to the hemorrhoids in this case, I should not have succeeded in restoring my patient to the condition of health.—*Monthly Journal of Medical Science, Nov.* 1854, *p.* 441.

MISCELLANEOUS SUBJECTS.

125.—ON THE CLIMATE OF EGYPT.

By the Rev. Thomas Barclay, D.D., Currie Manse.

[The following remarks by Dr. Barclay will be read with interest. Now that locomotion is so rapid and so comfortable, and likely to be so, even in Egypt itself, a journey to Thebes may be included in the treatment of pulmonary diseases. From the beginning of October to the end of April, is the time when the climate of Upper Egypt is most delightful.]

The malady for which I sought relief in a southern climate, was chronic bronchitis in its most aggravated form. All the usual remedies, both external and internal, had been resorted to, and steadily persevered in, under the ablest medical advice: but with little temporary and no permanent benefit. I had tried with the same unfavourable result those places on the south coast of England, which are usually recommended to invalids. The symptoms obstinately resisted every remedial measure. The chronic character of the disease was frequently exchanged for attacks of a subacute form. These always commenced with inflammation of the pharynx, creeping insidiously down the glottis and trachea to the bronchial tubes, which became gorged with mucus throughout their whole extent; and on every spot on which the stethoscope could be planted over the lungs, the mucous *râle* was to be heard. Dyspnœa, accompanied with loud wheezing, was at all times distressing; but its nocturnal exacerbations, which invariably occurred after a short sleep, like fits of spasmodic asthma, were often so fearfully violent as to threaten suffocation. The digestive organs were deranged—I had no appetite for food—my frame was emaciated, and my strength prostrated.

Warm and equable as the winter temperature is at Cairo, the weather at that season is not free from frequent and sudden changes. It is in Upper Egypt that the invalid must seek entire exemption from these; and there he will not be disappointed.

While I was there, my register was kept on the Nile, and consequently it shows a lower temperature, at least in the night time, than would be denoted at a little distance from the river; while the dryness indicated by the hygrometer in the latter case, was many degrees greater than that registered on the river.

The following table contains the result of the observations noted between Thebes and Asouan, the uppermost town in Egypt, and

from these an idea may be formed of the winter climate in that region :—

Thebes.

Date.	Lowest temperature by night.	Highest temperature by day.	Diurnal range.	Degrees dry.	Degrees damp.	State of weather.
	°	°	°	°	°	
Jan. 17.	64	70	6	7	...	Cloudless sky and bright sunshine every day; the firmament blazing with stars every night; no evening chills.
„ 18.	63	68	5	7	...	
„ 19.	66	70	4	5	...	
„ 20.	64	69	5	12	...	
„ 21.	64	71	7	7	...	
„ 22.	69	72	3	6	...	
„ 23.	68	72	4	10	...	

The benefit I derived from breathing the genial air of the Thebaid was very decided. The periodical night attacks, though still occurring, were less violent and of shorter duration; my breathing was greatly relieved; and my strength was so far recruited that I was able, without fatigue, to make daily excursions, sometimes of many miles, to the monuments with which this part of the valley of the Nile is studded.

At Thebes, which for several reasons should be made head quarters in Upper Egypt, the day temperature from the middle of January to the middle of February, ranges from 68° to 78°, and after the latter date, the heat becomes rather too great to be borne with comfort. The invalid should then commence his downward voyage, and by the time he reaches the latitude of Cairo, he will find the climate there nearly as delightful as that which he left at Thebes. My register during the first week of March at Cairo was as follows :—

Cairo.

Date.	Lowest temperature by night.	Highest temperature by day.	Diurnal range	Degrees dry.	Degrees damp.	State of weather.
	°	°	°	°	°	
March 1.	66	72	6	9	...	Gent. brze., sunny.
„ 2.	69	74	5	4	...	Do. do.
„ 3.	68	75	7	0	0	Fog.
„ 4.	68	66	8	6	...	Calm and sunny.
„ 5.	71	74	3	...	2	Haze.
„ 6.	69	72	3	6	...	Cloudy and sunny.
„ 7.	65	69	4	6	...	Drops of rain.

In a city like Cairo, with a dense population of more than two hundred thousand people, and with narrow streets walled in by lofty houses, and constantly watered to lay the dust, the air can neither be so pure nor so dry as in the desert. Accordingly, the medical gentlemen of Cairo are in the habit of sending almost all their convalescent patients to reside for some time in the adjoining desert, to enjoy the benefit of its invigorating air. In it there is no water, either running or stagnant, to produce humidity by evaporation, nor is there any decaying matter, either vegetable or animal, to taint the atmosphere with noxious exhalations. It is in the desert, therefore, that the qualities of warmth, equability, dryness, and purity, which are characteristic of the Egyptian climate in general, are to be found in the most perfect union. The soothing influence of the desert air on delicate organs of respiration, and its invigorating influence on a debilitated frame, can be appreciated by those only who, like myself, have experienced its marvellous effects. It is at once balmy and bracing; and the invalid, while breathing it, feels as if he were drinking in health at every pore. I quitted Cairo for the desert of Gheezeh, on the 12th of March, and took up my abode in the neighbourhood of the Pyramids; and there a sudden change came over me, as if by magic. The second night I passed in the desert was marked by sound and uninterrupted sleep, and the absence of the periodical fit of dyspnœa—the first occasion on which I had enjoyed the one, or had been exempted from the other, for more than two years. My appetite soon became *excessive;* both the flesh and the strength I had lost during my illness was restored; every symptom of my complaint disappeared; and at the end of a month, I returned to Cairo in perfect health.

The only other place in Egypt whose meteorology it seems necessary to notice is Alexandria. When it is borne in mind that this city is surrounded on three sides by the Mediterranean Sea, and that on the land side it is enveloped by the Lake Mareotis, a moist atmosphere may be expected; and accordingly, the degree of humidity is excessive. In this respect the state of the atmosphere in Alexandria, during the early part of May, will be found to contrast remarkably with that of Cairo and its vicinity during the latter part of April; while the greater equability of temperature in the former city, both from day to day and during the twenty-four hours, is no less observable.

How far Alexandria, during the months of March and April, may be a more suitable residence than Madeira or Italy, for those whose complaints require a climate at once warm, equable, *and moist,* I leave it to gentlemen of the medical profession to judge; but I do think myself fully warranted to denounce it as a most unsuitable place for a bronchitic patient. During all the time I was there I felt as if inhaling steam; my breathing was excessively affected, and my whole system was languid and relaxed. These effects, however, by the time

I had been twenty-four hours at sea, were completely dispelled, leaving no doubt whatever as to their cause.

I may add, that dyspepsia is very prevalent among the European residents in Alexandria; and I was informed that cases of pulmonary consumption, though not common, do occasionally occur among the natives of the whole northern sea-board of Egypt; but the inhabitants of Middle and Upper Egypt, as far as I could learn, are entirely exempted from that fatal disease. The prevailing maladies throughout all Egypt are dysentery and ophthalmia—both induced, it is believed, by exposure of the heated frame to currents of cold air.

These observations on the subject of Egyptian climate would be very incomplete if I failed to notice its influence in arresting hæmoptysis. Several instances of its efficacy in that respect were mentioned to me, and one very decided case fell under my own observation. A. B., a middle-aged gentleman, of a clear and florid complexion, had been for years afflicted with this complaint to an alarming extent. He had spent a winter in Italy without experiencing the smallest mitigation of his ailment. He had next been sent to Madeira, and there the malady was very greatly aggravated. He was at Malta when I went to Egypt; but finding no relief there, he came to Cairo in the end of December, and took up his abode at the hotel at which I lodged. The effect of the change of climate was immediate. The spitting of blood ceased at once, nor did it ever recur during his stay at Cairo, which was prolonged till the end of April. He then went to the south of Spain, and remained there till the month of June, when he returned to England, apparently in perfect health, and fully resolved to spend the whole of the following winter in Egypt, with the view of confirming his cure.

The transition from the climate of Egypt to that of Britain is too violent to be hazarded by one whose respiratory organs are in a delicate or dubious condition, especially as the season at which it is necessary to quit the one country is far from being genial in the other. I therefore stopped in Spain on my homeward passage, and spent the latter part of May and the greater part of June in that country and in Portugal.

Having heard that the air of Malaga was remarkable for its mildness, I repaired thither, and was both delighted and surprised to find in Europe a climate scarcely inferior in any respect to that of the latitude of Cairo. The register I kept while there, and from which I subjoin an extract, shows a temperature which was probably only a few degrees lower than that of Cairo at the same date, while its equability was greater than I had noted anywhere except at Alexandria; and what is still more remarkable, the dryness of its atmosphere exceeds that of Cairo, and contrasts surprisingly with the humidity with which the air of Alexandria is loaded.

Malaga.

Date.	Lowest temperature by night.	Highest temperature by day.	Diurnal range.	Degrees dry.	Degrees damp.	State of weather.
	°	°	°	°		
May 20.	70	72	2	9	...	Bright sunshine.
„ 21.	70	73	3	12	...	Do.
„ 22.	71	73	2	12	...	Do.
„ 23.	69	72	3	11	...	Rain.
„ 24.	67	70	3	10	...	Do.
„ 25.	66	69	3	10	...	Do.
„ 26.	68	70	2	14	...	Bright sunshine.
„ 27,	69	72	3	16	...	Do.
„ 28.	69	73	4	15	...	Do.
„ 29.	69	73	4	15	...	Do.
„ 30.	69	72	3	16	...	Do.

The atmospheric conditions indicated by this table are doubtless to be referred, partly to the geological structure and the physical conformation of the country around Malaga, and partly to the latitude in which it is situated. I am persuaded that, in a therapeutic point of view, the climate in this part of Andalusia is deserving of more attention than it seems hitherto to have received. Those who take it for granted that the climate of Italy must be the mildest and warmest in Europe, seem to forget that Malaga is 248 miles further south than Naples, 318 miles farther south than Rome, and 518 miles farther south than Venice; and those who have not adverted to the fact, will probably be surprised to find that it is five miles farther south than Algiers. Both Gibraltar and Cadiz are somewhat south of Malaga, but both have a great diurnal range of temperature, and are nearly equal to Alexandria in the humidity of their atmosphere; the one standing on an almost insulated rock in the Mediterranean Sea, and the other on a narrow spur of land projecting into the Atlantic Ocean.

In the beginning of June I moved northward to Lisbon; but on its climate, and that of delightful Cintra, no information is needed. In the end of June, 1853, I returned to Scotland; and though I was threatened soon after I reached home with a recurrence of bronchitic symptoms, these *now* yielded readily to medical treatment. I am most thankful to be able to add, that during the last twelvemonth I have enjoyed excellent health, nor have I been affected, during that time, by any of the changes of weather to which our variable climate is subject.—*Edinburgh Medical and Surgical Journal, Oct.* 1854, *p.* 656.

126.—OCCURRENCE OF DELIRIUM IN ACUTE RHEUMATISM.

By Dr. C. M. Durrant, Physician to East Suffolk and Norwich Hospital.

The profession is deeply indebted to Dr. Watson for having insisted upon the importance of attending to this symptom, as an indication of the probable existence of inflammation of the pericardium.

Delirium occurring during the progress of acute rheumatism is always of grave import, and calls for immediate and frequently repeated examination of the condition of the heart. It is a symptom which is very likely to mislead the practitioner; and if the treatment be directed solely to the mitigation of the cerebral disturbance, the pericarditis, upon which the delirium depends, may silently advance, and ultimately destroy the patient.

In the fatal cases which have been reported of this complication, and in which an opportunity of examining the condition of the brain and heart after death has been afforded, the former, in many instances, has been found free from disease, while the latter has shown unequivocal results of recent but unsuspected inflammation. These cases of apparent inflammation of the brain, or its meninges, were formerly attributed to metastasis; the more probable cause is now considered to be uræmia, or it may be direct reflex action, excited by the pericardial inflammation. The latter is more especially the cause of the convulsive movements of the limbs, which sometimes take place under the circumstances which we are now considering.

The delirium may be active and violent, but it is more generally characterised by muttering and taciturnity. The pulse is usually very much accelerated. In the following case, the delirium occurred during the progress of the pericarditis; but the symptoms from the first were so severe, and the extension of the inflammation to both pleuræ so fully marked, that its brief detail may not be out of place.

Case.—A. M., aged 50, after having been out of health, was seized with acute rheumatism, to which, in a few days, was superadded pericarditis.

On examination, his countenance was anxious; the breathing was quick and catching; and he complained of considerable pain and oppression at the region of the heart. The tongue was coated with the white rheumatic fur; he had profuse sour perspiration; his bowels were regular; the urine was scanty, with dense deposit of purpurates and lithates.

On applying the stethoscope, a friction sound was heard over the entire cardiac region, so loud as to mask considerably the sounds of the heart itself. The patient, prior to my visit, had been twice largely bled. Local depletion by leeches to the cardiac region, with calomel and opium, in addition to salines with colchicum, were prescribed.

On the following day, the friction sound was less intense, but the patient now complained of pain beneath the right breast, where a

friction sound was also audible. A blister was now applied to the region of the heart, and the mercury, &c., continued. On subsequent examination, the friction sound had disappeared, but the heart's sound had become distant; while the cardiac dulness had considerably increased, extending upwards towards the left clavicle. Signs of effusion also distinctly obtained in both pleural cavities. The mouth at this period was very sore from the mercury.

The subsequent treatment for some days consisted of repeated large blisters both in front and behind, with saline diuretics, supporting the strength with strong broths, and the occasional exhibition of a stimulant in the shape of wine.

The condition of this patient for more than a week was a most critical one; at this period delirium supervened, with constant talking and muttering, and occasional attempts to get out of bed. The evacuations and urine were now passed involuntarily. The pupils contracted naturally, and but slight heat of the scalp existed; the pulse was much accelerated. The mouth was still sore, and the absorbents acted slowly. The pericardial distension was still very considerable. The blistered surfaces were kept discharging freely, and a blister was also applied to the nape of the neck; while the quantity of wine allowed was increased. The delirium continued more or less for a fortnight, when the symptoms gradually abated; and, although I have not had an opportunity of ascertaining the precise condition of the heart and lungs after so formidable an attack, still the reports both from his medical attendant and friends have been satisfactory, inasmuch as he has been able to leave home and attend to business.

Remarks.—Dr. Stokes has rendered good service by recommending a more liberal allowance of wine in the latter stages of the treatment of, and during the convalescence from pericarditis. Attention to this advice will be more particularly called for, if venesection have been freely had recourse to at the onset of the attack. The nature of the disease, after the violence of the primary fever has been subdued, is essentially a depressant of the nervous power, more particularly if the brain be oppressed by uræmic poisoning.

Very many cases would, I believe, under the present asthenic character assumed by disease, have a better prospect of recovery, were the injunctions of Dr. Stokes in reference to the earlier exhibition of wine more generally attended to; and many a convalescence, I cannot but think, would be materially shortened were the lancet used still more sparingly, and, when it is absolutely necessary that the quantity of blood be withdrawn, with a prospective regard to the ultimately depressing nature of the disease.—*Association Jour., Oct.* 6, 1854 *p.* 903.

127.—ON CITRIC ACID.

By Dr. H. Bence Jones, F.R.S. Physician to St. George's Hospital.

The first point which immediately presents itself is the identity or difference between citric acid and lemon-juice. What other substances

does the lemon-juice contain in addition to citric acid? Do any of the many substances which exist in lemon-juice so modify the action of the citric action which it contains, that the medicinal effect of these two remedies cannot be considered as identical? The first question was a chemical one. Can lemon-juice be considered as a solution of citric acid in water, or is it an acid citrate of potassa, or does it contain some other active substances in solution?

At my request, Dr. Hoffmann undertook an analysis of the ash of lemon-juice, and this was made by Mr. Whytt, of the College of Chemistry. Some experiments which I have made on the degrees of acidity of fresh lemon-juice I shall also mention here.

The lemon-juice was obtained from fresh lemons. It contained no trace of sugar: it had specific gravity of 1036·0, 1037·9, and 1038·4. The acidity varied in different specimens. Thus

1000 grains of lemon-juice required in one experiment a solution of caustic soda containing 30·4 grains of soda. In a second experiment a 1000 grains of lemon-juice required 29·4 grains of soda.

These quantities of caustic soda are equivalent to 62·2 and 60·8 grains of pure anhydrous citric acid. Hence each ounce of the lemon-juice examined contained about 28·1 to 27·5 grains of pure anhydrous citric acid.

1000 grains of the lemon-juice, when evaporated to dryness, and burnt, left 3·60 grains of ash. Hence an ounce of lemon-juice contains only 1·64 grains of ash.

[Dr. Jones then gives a table showing Mr. Whytt's analysis of the ash. He then says:—]

As it appears from these experiments that an ounce of lemon-juice contains 27 to 28 grains of citric acid, and only three-quarters of a grain of potash, which, at the very utmost, can only combine with one grain of citric acid, it follows that an ounce of lemon-juice does not contain two grains of citrate of potash, and for all practical purposes we may consider it as a solution of free citric acid, every ounce containing about 26 or 27 grains of free citric acid. With regard to the difference of the medicinal action of lemon-juice and citric acid, I instituted some experiments on the action of lemon-juice in increasing the acidity of the urine. The question I proposed to myself was to determine whether lemon-juice acted like a free acid and increased the acidity of the urine, and to what extent it did so; whether it caused the formation of free urea and crystals in the urine on standing.

The urine of a person in very good health was examined each time it was passed for twenty-four hours by taking a fixed quantity, and exactly neutralizing it by a solution of carbonate of soda containing for each degree the twelfth of a grain of carbonate of soda."

[After another long and interesting table, Dr. Jones proceeds to say:]

From these experiments it is perfectly evident that lemon-juice in twelve-ounce doses daily does temporarily cause an excessive acidity of the urine, and gives a deposit of free uric acid in the urine. Lemon-juice, acts, then, as free acid on the urine, and does not at all resemble in its effects those produced by citrate of potassa and other vegetable acid salts.

Regarding the diuretic properties of lemon-juice, the quantity of urine passed each day during the four days shows that when taken pure, without water, by a healthy person, no strong or immediate diuretic action is observable.

The pulse also presented nothing remarkable in force or frequency when the lemon-juice was taken.

The results, then, of those experiments, and the knowledge which is obtained by chemical analysis, show that lemon-juice may be considered as a solution of citric acid. You will remember that citric acid is a poison having an action similar to that of oxalic acid. In half-drachm doses it killed a rabbit in twenty minutes, causing loss of sensation and muscular action, and stopping the action of the heart. On examination after death no inflammatory action was observed. The action of lemon-juice is similar, but less in degree, to that of oxalic acid, and other vegetable acids.

From the testimony of observers like Dr. Rees and Dr. Babington, there can be no doubt that its anti-febrile sedative action may be obtained in disease. In acute rheumatism and gout it is by extended observation certainly no specific. It does not even reduce fever so surely and quickly as many other remedies: but it is worthy of attention, that in opposition to the theory of excessive acidity as the cause of these diseases, it certainly does not aggravate the symptoms as might have been expected.

The account published in the *Rêvue Med. Chir. de Paris*, August, 1853, of cases of acute rheumatism, subjected only to the expectant treatment, shows how easily recovery may be attributed in acute rheumatism to the last remedy employed. Still, though lemon-juice is no specific for rheumatic inflammation, yet its anti-febrile action may occasionally be thought preferable to that of nitre, or many other saline medicines.

It ought never to be forgotten that it acts like a free acid on the urine, setting free uric acid crystals. In St. George's Hospital, I have found free uric acid in the urine twelve hours after it has been passed, in every case in which large doses of the lemon-juice were given.

Hence, in chronic rheumatism and gout, the remedy should be used with care, lest red sand or uric acid calculus should be produced. A pint (20ℨ) and more of lemon-juice in twenty-four hours cannot be given for three, or four, or more weeks continuously, without risk of the formation of gravel.

In conclusion, I must again refer to the action of oxalic acid as being the type of the action of the vegetable acids on the system. It

is worthy of remark, that the mineral acids altogether differ from this type. The poisonous action of the mineral acids differs in kind from the sedative action of oxalic acid, although they agree in the corrosive action which they possess.

If you inquire why does oxalic acid act as a poison depressing the system, no positive answer can yet be given. There is, however, a striking resemblance in the action of some other compounds of carbon, which I will venture for a moment to bring before you.

Carbonic acid CO_2 is a narcotic poison.

Oxalic acid C_2O_3 is a stronger poison.

Carbonic oxide CO is the most powerful of these three closely related substances.

The less oxygen the more poisonous the substance. Hence the activity of the substance would appear to depend on the carbon rather than on the oxygen. Some other simple compounds of carbon, free from oxygen, also possess poisonous properties.—*Medical Times and Gazette, Oct.* 21, 1854, *p.* 408.

128.—*On the Effects of Liquor Potassæ.* By Dr. E. A. Parkes.—It may be foretold of liquor potassæ, that if taken unneutralized into the blood (in cases in which no violent disturbance is going on in the body) it will cause an increased formation of sulphuric acid in all cases, of phosphoric acid in a minority, and of some other acid (probably an organic) now and then. It will increase also the organic constituents of the urine, especially the urea. Its main effect is, then, to hasten the metamorphosis of some of the albuminous structures of the body, but it may also act on the saccharine and fatty constituents of the body, though no evidence of this is given by the examination of the urine. Its utility in disease is evidently connected with its destructive and eliminating powers. Whether it is more powerful than other alkaline medicines in hastening the metamorphosis of tissue, can only be told by future experiment.—*British and Foreign Med. Chir. Review, Oct.* 1854, *p.* 506.

129.—ON A NEW METHOD OF URETHROTOMY FOR THE CURE OF STRICTURE.

By M. Maisonneuve, Surgeon to the Hôpital Cochin.

Until the very recent period when Mr. Syme, of Edinburgh, and M. Reybard, of Lyons, conceived the happy idea of employing free incisions in the treatment of strictures of the urethra, the radical cure of these affections was considered to be nearly impossible.

Cauterization, on which great hopes had been placed, had not fulfilled the expectations formed respecting it. Scarification, which was, however, considered rather as an adjuvant of dilatation than as a curative method, was attended with only transitory success. Finally,

dilatation itself, notwithstanding the many improvements introduced into the modes of effecting it, most frequently succeeded only in palliating the evil, without removing its organic cause.

The treatment of strictures had consequently, in spite of the constant efforts of surgery, made scarcely any progress.

The system of employing free incisions is the only one which includes an idea really containing the elements of success, and which appears to attain the end so long sought for.

We can no longer, in fact, call in question the possibility of procuring a permanent enlargement of the urethra, by means of deep incisions made in the indurated tissue of which strictures are formed. The important works of MM. Reybard and Civiale have incontestably established its truth, and the clinical observations which demonstrate it are now numerous enough to admit of every one having witnessed and verified them.

It is then a fact now secured to science that a deep incision, longitudinally made in the canal of the urethra, gives rise to a depressed cicatrix, and that this forms a sort of permanent trench, the width of which augments by so much the dimensions of the canal.

But if this fundamental principle of urethrotomy has received the assent of almost all surgeons, this is by no means the case with the methods and operative proceedings intended to realize its application.

These methods are three in number.

One, called Syme's method, urethrotomy from without inwards, consists in dividing successively with a bistoury the skin, the areolar tissue, and the walls of the urethra, corresponding to the stricture.

The second method, conceived by various surgeons, but applied rather to scarifications than to incisions, is called urethrotomy from before backwards, and is performed with instruments of different forms, the point of which, introduced into the opening of the stricture, serves as conductor to a cutting blade, which springs out in front of the obstacle, and is then pushed against it to divide it.

The third plan, invented by M. Reybard, under whose name it is known, consists in dividing from behind forwards the entire thickness of the urethral walls corresponding to the strictured part, by means of an instrument the blade of which, at first concealed, opens when it has passed the obstacle. This blade, thus opened at an obtuse angle, is drawn from behind forward, against the stricture, which it cuts through the entire thickness of the wall of the canal.

Each of these methods certainly fulfils its principal object, namely, the division of the strictured points; but their operative manipulation is usually so delicate and complex, and, above all, the accidents they may involve are so numerous and so serious, that the most experienced practitioners hesitate to adopt them.

The new method I have the honour of submitting to the Academy has the advantage of leading to the same results as the preceding, while it is attended with scarcely any of their inconveniences, and its

execution especially is so simple, that it may, in this respect, be reckoned in the category of the most ordinary operations.

This method, which I shall designate by the name of urethrotomy from within outwards, consists in dividing the strictured walls by means of a concealed bistoury, the blade of which, contained in a sheath, is introduced into the opening of the obstacle, where, by a most simple mechanism, it becomes disengaged, presses from within outwards on the stricture, which it tends to dilate, and then on the least traction cuts the affected parts to the depth previously determined on.

Instrument.—The instrument of which I make use is not a new instrument. It is known to all practitioners; its mechanism is familiar to them: it is simply the lithotome of frère Côme. To convert it into a urethrotome, I have merely made its blade a little longer and bent on the flat, given its sheath a cylindrical form, especially at its extremity; marked on it the divisions of the mètre, and adopted an accurate regulator, so as to arrange its articulation in such a manner that when required the opening of the blade may be equal to its entire extent.

Description of the Operation.—Preliminary Precautions.—Before performing urethrotomy by my method, the surgeon should gradually bring the urethra to a degree of dilatation sufficient to admit of the urethrotome being easily introduced. He ought especially to accustom the canal to the contact of instruments, in order to avoid the febrile attacks which in this region so frequently complicate even the most simple operations. To this end the patient should, during at least a fortnight, be subjected to progressive dilatation by means of elastic bougies. He should also be kept on light diet, have frequent baths, emollient lavements, and cooling drinks.

This preliminary treatment is not, however, intended merely to accustom the canal to the contact of instruments, and to obtain the amount of dilatation necessary for the introduction of the urethrotome: it is also useful by enabling the surgeon to introduce exploring instruments, and so to ascertain exactly the number of the strictures, their position, extent, degree of resistance, &c.

All these objects having been accomplished, the operation may be proceeded with.

The patient should be placed upon his back, and kept in that position by assistants. It is also advisable that he should be brought under the influence of chloroform. The surgeon, situated at his right side, again explores the urethra with a bougie (à boule); then, seizing the urethrotome, the degree of opening of which has been previously fixed at about 15 millimetres (0·59055 inch), he introduces it as he would an ordinary catheter to 3 centimetres (1·1811 inches) beyond the last stricture, and arranges it so that its concavity shall look upwards. Then, holding the penis on the instrument, he opens the latter by pressing on the lever, and by a movement of traction makes it traverse a space of two centimetres in extent (.7874 inch).

This movement is sufficient to cause the cutting blade to divide all the obstacles which opposed its expansion, without, however, involving the intervening sound parts. The pressure on the lever being then removed, the blade returns into its sheath, and the urethrotome is gently withdrawn.

Mode of Action of the Urethrotome on Strictures.—We have seen that at the moment the surgeon, in the manœuvre I have described, presses on the lever, the blade of the urethrotome driven out of its sheath, at once encounters the obstacle which opposes its separation: then, as soon as a slight degree of traction is given to the instrument, its edge divides the indurated portion without previously injuring the neighbouring sound parts.

This property, possessed by my urethrotome, of not being able to reach the sound tissues until after it has divided the strictured portions, is one of the essential characters of the method, and is not one of its least advantages. It is evident how much security it gives both the practitioner and the patient.

It is particularly in cases in which numerous strictures exist that this property is really valuable. When in fact we have a series of strictures separated by intervals of different lengths, urethrotomy by the ordinary plans is an operation so formidable, that its possibility is scarcely conceivable.

In Syme's method, for example, the surgeon would be obliged, in order to divide all obstacles, to slit the urethra in almost its entire length, and of this its author was so conscious that he confines his operation to those cases in which there is but a single stricture, and where the latter occupies the perineal or membranous portion of the urethra.

The adoption of M. Reybard's mode is not, under the circumstances I have described, productive of much more advantage; for the blade of the instrument having to open behind each stricture, and having necessarily to divide a considerable portion of the sound tissue behind and before the obstacle, it frequently happens that all these incisions united constitute an enormous amount of mutilation, while, in addition, their execution requires a series of long and difficult manœuvres to open and close the instrument.

In my method, on the contrary, whatever be the number and position of the strictures, the surgeon is assured that with a single stroke all that opposes the evolution of the cutting blade shall be divided, while the sound parts cannot possibly be seriously compromised. By it we get rid of the complicated manœuvres and enormous incisions which have justly alarmed practitioners, and have made them shrink from urethrotomy.

Immediately after the incision, the surgeon introduces into the canal a large metallic bougie, five or six millimetres (·19685 or ·23622 inch) in diameter, in order to ascertain that all the obstacles are completely divided. He afterwards replaces this bougie by an elastic catheter of

the same size, which is allowed to remain for, at least, twenty-four hours, and, at most, three days. The object of this is to spare the patient the acute pain caused by the urine in passing over the wound, as well as keep the lips of the incision apart, and to stop the flow of blood.

It is afterwards necessary to continue for about six weeks the daily introduction of a large metallic bougie, to maintain the dilatation of the canal.

Accidents consecutive to the operation.—In general the consequences of urethrotomy, performed according to my method, are very simple.

The hemorrhage stops in a few hours. The pain produced by the passage of the urine ceases after the eighth or tenth day, and the suppuration dries up towards the end of the sixth week. But, under some circumstances, we observe accidents of another kind.

1. *Engorgement of the Testicle.*—This scarcely ever occurs except about the eighth day. It is of little consequence, and disappears under the influence of rest and the use of emollient cataplasms. Once, however, I have seen it assume the appearance of a very acute orchitis, which required the employment of incisions and the repeated application of leeches.

2. *Abscess in the Perineum.*—In the first trials I made of my method, when I performed the incision directly downwards in the median line, I had two cases of urinary abscess, followed by numerous fistulas in the perineum and the scrotum ; but since I have adopted the lateral incision, nothing of the kind has occurred.

3. *Urethral Fever.*—Every practitioner knows how frequently catheterism is followed by febrile attacks of the remittent and intermittent types. These affections, sometimes very serious, may appear after urethrotomy, as after any operation performed on the urinary passages. Those I have hitherto seen have not been of any importance ; they have merely consisted in a few transient rigors. But the surgeon should not forget that this is one of the most formidable dangers which attend the operation we have been considering; and he ought to take every care to prevent or combat it. Frequent baths, mucilaginous drinks, rest, and, above all, extreme prudence in the use of the catheterism employed to procure dilatation, are the best means of doing so. —*Bulletin Général de Thérapeutique*, vol. xlvi., February, 1854, p. 169. —*Dublin Quarterly Journal of Medicine, Nov.* 1854, *p.* 472.

130.—*On Spongy Bougies.*—M. Alquie has constructed bougies of the following kind: Round a whalebone bougie is rolled a sponge; this is reduced by compression to a third of its volume; it is then covered with gold-beaters' skin, and is covered with the salve used in ordinary bougies. The instrument when about to be used is dipped in water, and then, when its point has been touched with cerate, is introduced into the urethra. The sponge slowly imbibes the water, and

swells so as to distend the urethra, supposing this to be the cana operated upon. Whether there is then any difficulty in withdrawingl the instrument, or any danger of injuring the urethra in so doing, does not appear.

Ricord has used this instrument in two cases of stricture: it was introduced easily, but could not be borne more than an hour; it was withdrawn without difficulty, as the swelling of the sponge was not great.

M. Alquie points out various other possible applications of the sponge-bougies. He alludes to a case in which the fractured nasal bones were held in place easily by its means.—*British and Foreign Med.-Chir. Review, Oct.* 1854, *p.* 558.

131.—*Sore Nipples.*—M. Bourdel recommends the application of a piece of lint dipped in the tincture of benzoin placed over the part, then removed, wetted with the tincture, and replaced, so as to cover the ulcer with a layer of liquid. The first application is painful, but the pain seldom lasts more than fifteen minutes; the tincture forms a coating, which the action of sucking does not displace.—*Ibid, Oct.* 1854, *p.* 563.

132.—*Prurigo.*—Dr. Richart recommends in prurigo ani et vaginæ, which are often most obstinate complaints, the following "specific" treatment: Take equal parts of sulphate of zinc and of alum, roughly powder them, put them into a glazed earthenware vessel; put it on a slow fire, and leave it there till bubbles of air are no longer disengaged, and till the mixture acquires a stony hardness: then powder it, and throw it by small portions at a time into boiling water, then filter, and apply to the parts with a sponge and on linen.—*Ibid, Oct.* 1854, *p.* 564.

133.—ON THE RADICAL CURE OF REDUCIBLE INGUINAL HERNIA.

By T. Spencer Wells, Esq.

[Professor Sigmond of Vienna, Rothmund of Munich, and Wützer of Bonn, have all succeeded by the following method in curing reducible hernia. Mr. Wells has himself operated with apparent success in two cases, adopting the plan of Wützer, which he describes as follows.]

It consists of a wooden cylinder, a needle passing through it, an outer wooden case, and a screw to bind the case and cylinder together. After pushing a part of the skin of the scrotum before the forefinger, the cylinder takes the place of the finger, the needle is passed through it, (through the sac and integument,) and serves, with the screw, to fix and bind the cover and cylinder together, so that the invaginated skin,

the walls of the sac, and the abdominal integuments, are pressed together with any degree of force that may appear safe and advisable. The instrument is left *in situ* from six to eight days, with the effect of producing adhesion of the whole of the sac, a firm, organised plug filling the inguinal canal. Very little pain is said to be produced. The patient is confined to a sofa until the needle puncture is healed, and he wears a truss for three months afterwards, to avoid the danger of the breaking up of new adhesions. Mr. Wells believes that there are grounds for admitting this operation within the province of legitimate surgery, and that the classes of cases in which it should be performed are—1. In strong persons, up to forty or forty-five years of age, when the hernia is of moderate size; in such persons a perfect cure may be expected. 2. In cases where the hernial protrusion is so large that it cannot be kept up by any mechanical contrivance. Here a radical cure is not to be hoped for, but the evil is so much diminished that a truss can be made to keep up the hernia effectually. He concluded by expressing his belief that, as by this new method the whole of the inguinal canal can be permanently closed, it is far superior to all others, and that the evidence he had adduced of its safety and success should lead to its further adoption in this country.—*Lancet, May* 20, 1854, *p.* 542.

134.—NEW PROCEEDING FOR THE CURE OF HERNIA.

Doubts were expressed in a former number of the 'Gazette Hebdomadaire,' as to the efficacy of a proceeding lately applied by Professor Jobert to the radical cure of inguinal hernia. Perhaps it should be said "re-applied," for the proceeding belongs to M. Velpeau; and it may be as well to observe, that this surgeon, instead of puncturing the sac blindly (*á l'avenglette*) across the skin, exposes it by a previous incision, to be sure of making the injection penetrate; and that yet he has obtained only a moderately satisfactory result. (See *Médicine Opératoire*, t. iv., p. 150.)

Now, the application of iodine will not at best effect more than the obliteration of the hernial sac; it will not extend to the inguinal canal; and the obliteration of the canal is an essential and indispensable condition to a radical cure. In effect, an obliterated sac can form a plug for some time to the external orifice of the canal; but, supposing that the hernia is old, and has acquired a right of domicile, it will easily drive down this feeble barrier, pushing the peritoneum before it. Supposing even that the walls of the sac rest, solid and firmly applied one to another, even in the interior of the canal, there is nothing to oppose the reprotrusion of the peritoneum by the viscera. In a word, the suppression of the hernial sac, in whatever manner it may be obtained, by ligature, by suture, by the introduction of filaments of gelatine, of strips of goldbeater's skin, by iodine, injections, &c., cannot pretend to do more than neutralise, to a greater or less extent, the actual

effects of the descent of the peritoneum; it is incapable of preventing a new protrusion. The success may be complete, provided the viscera exert no new efforts. Under the opposite condition, it will be only temporary. Thus it will be seen that no conclusions as to the result of the proceeding can be formed until after a considerable time.

What is really required, is either adhesion between the anterior and posterior wall of the inguinal canal, when the sac will disappear by the fusion of these parts, or the introduction of a plug, which will not escape, into the canal. And, moreover, it is essential that the obliteration should extend to the level of the internal ring, without which an interstitial hernia might form. M. Gerdy has the honour of proposing a plan by which these conditions are fulfilled. The proceeding consists in invaginating the skin of the scrotum in the inguinal canal as far as possible; in fixing the end of this inflected portion (*doigt de gont*) to the skin of the abdomen by a pegged suture; in cauterising with ammonia the internal surface of the cutaneous plug, to excite mutual adhesion of its walls, and to render it solid. Unfortunately this plug, which by its external surface has no means of attachment save to the subcutaneous cellular tissue, terminates, in many cases, in yielding before pressure of the intestines, and the hernia is re-produced more or less completely.

A completion of this operation has recently been conceived by M. Valette, a gentleman whose name is becoming extensively known and respected in the scientific world. He proposes to give fixed attachment to the invaginated skin by making it adhere to neighbouring parts above and in front, without prejudice to the obliteration of the infundibulum.

His surgical apparatus is composed of an invaginator,—a sort of plug in ebony or boxwood, about four inches long, rounded at the distal extremity, and furnished at the proximal with a metallic ring. This ring supports a handle turned so as to constitute a screw, which will receive two nuts (female screws) capable of being separated or approximated after being fixed upon the handle. The invaginator is bored by a curved canal, the entrance of which is the centre of its proximal extremity; the opening three-quarters of an inch from the distal extremity. A large curved needle can easily slide through the canal of the invaginator. An inch from the point of the needle is an opening or window, destined to receive a small quantity of the paste of chloride of zinc. (The chloride of zinc plays a great part in the surgery of Lyons.) At each extremity of the window, the needle presents a small opening to transmit a thread, by means of which the small bandalette of caustic is fixed in its box. As for the crosspiece which separates the opening into two, it is simply of steel, to give firmness to the fenestrated portion. A waistband of leather is necessary to maintain the invaginator fixed and immovable. On the anterior part of this band is a plate of steel, presenting an aperture for the passage of the long perpendicular handle fixed to the free extremity of the in-

vaginator. Articulations permit to this plate movements to the right or left, torsion on itself, &c.; and female screws are prepared to maintain it in any position the surgeon may choose. The details of the operation are as follow :—

The skin having been pushed back into the canal by the index finger, a gorget is first introduced, then the invaginator is pushed along the groove of the gorget. The surgeon must be careful not to place the invaginator too obliquely, lest the external extremity press the urethra, and interfere with the escape of the urine. An assistant seizes the instrument, and holds it in place. The inferior screw of the handle of the invaginator is abandoned; the plate of the waistband is properly adjusted, and directed by means of its articulations, placed both at its attachment to the band, and about the middle of its length, in such a way as not to interfere with the handle of the invaginator; finally it is secured by proper screws. The superior screw of the handle is then applied, so that the instrument becomes immovable. Two threads may, for additional security, pass from the instrument to buttons fixed on the waistband. This having been done, the needle is thrust forward, which, having traversed the skin inflected by the invaginator, appears externally. It is made to pass completely through the soft parts, upon which the caustic acts, and the operation is completed. Should the cauterisation be sufficiently extensive, (and the effect is usually obtained in ten or twelve hours,) the needle is thrust further forward, so that the aperture for the caustic becomes quite disengaged. An eschar forms across the track of the needle. Should the cauterisation be insufficient, the needle must be charged again. Inflammation ensues about the disorganised parts, and adhesions form of considerable strength. When the effect is obtained, the instrument is easily removed. First, the needle is withdrawn, then the invaginator. The extremity of the infundibulum may be, lastly, excoriated, if the instrument have not already done so.

M. Valette has performed this operation eight times. He publishes only two cases in detail. In one the patient suffered from two large inguinal herniæ since birth. He was discharged cured five months after the first operation, and three months after the second. A year afterwards he was examined and found well. The second case was that of a man who had an inguinal hernia as large as two fists. He went from the Hospital three months after the operation, but wrote four months after his discharge to say that the cure was perfect.

M. Valette gives the results only of the five remaining operations. All the herniæ were large; four times the cure was complete. In one a relapse was becoming apparent a month after his discharge from the Hospital.

In no instance were there any serious complications; there was no peritonitis, even in the slightest degree. We hope for further experience to test the value of an operation so important as one for the radical cure of hernia.—*Gazette Hebdomadaire*, Aug., 24, 1854.—*Med. Times and Gazette, Oct.* 7, 1854, *p.* 376.

135.—*On the Use of Ice combined with Compression in the Reduction of Hernia.*—In sixteen cases of strangulated hernia, in which all the ordinary means of reduction had been unsuccessfully employed, M. Baudens has effected the return of the bowel by the application of ice associated with permanent local pressure. The degree of refrigeration is to be regulated in proportion to the amount of inflammation in the hernial tumour, and the sensations of the patient. M. Baudens commences by the application of a simple compress, which is soaked from time to time in water, whose coldness is gradually increased. Fragments of ice are afterwards placed on the compress, and the cold thus produced may be augmented, if necessary, to a very considerable intensity by the addition of increasing quantities of common salt. Sometimes the refrigeration alone is sufficient to effect the reduction, as M. Baudens has witnessed on three occasions; but when this does not take place, an elastic bandage is applied over the ice, by means of which a continual steady pressure is exercised on the tumour. Whenever the rupture is so painful that no pressure can be tolerated, ice alone must be employed at the outset, and the elastic bandage may be added as soon as the sensibility of the swelling is sufficiently diminished. In order to facilitate the action of these measures, the pelvis should be kept in an elevated position.

M. Baudens ascribes the efficacy of this treatment to the powerful influence of cold in diminishing the size of the hernial tumour, by overcoming the capillary congestion, and extinguishing the inflammation in the strangulated bowel. Hitherto, says he, the treatment by cold has been condemned, because its therapeutical effects have been neglected or misappreciated. He regards the idea that the application of cold to a strangulated rupture is likely to produce mortification in the bowel as a groundless apprehension, believing that so large an amount of heat is developed in a part during the continuance of inflammation, as to enable it to resist with facility long and powerful refrigeration, without at all endangering its vitality. He admits, however, that it is quite possible to continue the application of cold too long, but maintains that the feelings of the patient furnish the best index as to the advantageous or prejudicial operation of the remedy. As long as the patient feels that the action of the refrigerant is grateful, and productive of comfort, its application should be continued; but, as soon as he begins to experience a disagreeable sensation of coldness and moisture it should be immediately removed. —*Gaz. des Hôpitaux.—Med. Times and Gazette, Sept.* 30, 1854, *p.* 349.

136.—MODIFICATION OF SYME'S AMPUTATION.

[Professor Pirozoff of St. Petersburg, has attempted an improvement on Mr. Syme's operation of exarticulation at the ankle-joint.

A correspondent of the 'Medical Times and Gazette' writes from

Dantzig that this improvement has been adopted at the Dantzig Hospital. He says:]

The point in which Pirozoff's operation differs from that of Mr. Syme, is the preservation of the posterior portion of the os calcis, which is left to fill up the heel-flap. The proceeding is obvious, and easy of execution. The incisions are made exactly as directed by Mr. Syme; after practising the first from one malleolus across to the other, the operator need only prepare the integuments about a line or two backwards from the inferior surface of the os calcis; he then proceeds to the execution of the second incision across the front of the joint; the astragalus is then exarticulated, and the os calcis divided by the saw behind the posterior extremity of the astragalus. The posterior extremity of the os calcis is preserved by this proceeding, instead of the whole being peeled out, as in Mr. Syme's operation; the heel-flap is thus completely filled out by the bone. The saw is then applied to separate the malleoli, and a thin slice of the articular surface of the tibia; the cut surface of the last-named bone is then brought into apposition with the cut surface of the os calcis, and the skin-flaps accurately united by sutures. The advantages of this operation are obvious:—1st. We obtain a longer stump than by Mr. Syme's operation, and the extremity of the stump is firmer, and far better adapted to bear pressure with impunity. 2ndly. The healing process takes place quicker, and is less likely to be retarded and disturbed, as after Mr. Syme's operation, the cavity of the heel-flap being filled up by the bone. 3rdly. There is no danger of the heel-flap being deprived of the necessary supply of blood, as it will be easy to avoid dividing the posterior tibial artery high up in the wound, as often happens during the execution of Mr. Syme's operation, even by the most skilful hand.

I am bound to add here, that I have seen a case of Syme's operation, in Langenbeck's Hospital, recover remarkably well, where the posterior tibial artery was divided immediately below the malleolus internus; whereas, in another case that came in shortly afterwards, where the artery was preserved during the operation in its whole length, extensive sloughing of the flap supervened.

Of course, I do not mean to imply that the preservation of the arterial branch was the cause of the accident; and am of opinion, as every man of clear sense must be, that the preservation of the artery must be aimed at as much as possible.

Pirozoff's operation is easier of execution than that of Mr. Syme. This is a point I do not particularly urge, as, by diligent practice on the subject, anybody who is able to handle a knife can acquire great dexterity in performing Mr. Syme's operation. A button-hole, or a "window," as we call it here, will certainly now and then make its appearance, just when you are priding yourself upon performing the operation with the utmost elegance: it is a consolation that the hole

injures the pride of the operator more than the patient. Of course, this operation will not supersede Mr. Syme's proceeding, as a perfectly healthy state of the os calcis, in its posterior part, forms a *conditio sine qua non;* but I think it well deserves the attention of the profession in cases adapted to its execution.—*Medical Times and Gazette, May* 6, 1854, *p.* 468.

137.—ON MORBID STATES OF THE URINE CONNECTED WITH INDIGESTION.

By Dr. H. Bence Jones, F.R.S., Physician to St. George's Hospital.

[It has long been known what intimate connection exists between indigestion and morbid states of the urine, and in numerous articles in this 'Retrospect' we have pointed it out in the writings of our most eminent modern physicians. On a former occasion Dr. Bence Jones pointed out the connection between the stomach and acidity and alkalescence of the urine. In the following article we give his views of indigestion, when the urine is comparatively neutral.

Sometimes digestion may appear to be good, and yet myriads of microscopical octohedral crystals may be seen: and even with the naked eye a cloud of these crystals may often be observed. In other cases severe dyspepsia may exist with urine of a neutral character. If this urine, however, be kept for six or twelve hours, and a little of the lower urine from the bottom of the vessel be examined by the microscope, innumerable octohedral crystals of oxalate of lime will be seen. Whatever depresses the general health disposes to this form of dyspepsia. Now, what is the treatment of these cases? Dr. Jones says:]

The best rule which I can give is this: take the oxalate of lime only as one symptom of indigestion, and treat the indigestion only, using the oxalate of lime as a test of the effect of the treatment of the stomach and general system.

A solid animal diet, with little bread and vegetables, and no fruit, and with little sugar or vegetable acid, most quickly removes the flatulence; but even an entirely animal diet will not cause the oxalate of lime entirely to disappear. I have seen the octohedral crystals after three days of total abstinence from every kind of vegetable food. The moderate use of vegetable food is not to be forbidden; and, even regarding sugar, I do not advise you to prohibit its use entirely, for this reason, that it is impossible that your prohibition can be enforced, unless you stop all bread and vegetables. As long as any starch is taken as food, sugar will be formed by the action of the salivary and pancreatic fluids. What, then, is gained, for example, by forbidding sugar, but advising that rice should be eaten? If the rice cannot remain in the mouth for two minutes without giving rise to sugar, how

manifestly either too much or too little must be enjoined when sugar is forbidden and starch allowed?

It is very certain, that, if vegetables are eaten, starch cannot be prohibited; in other words, sugar cannot be altogether stopped; and it ought to be considered, whether we should order no sugar, when some must be taken. It should also be remembered, that probably starch sugar is more injurious than cane sugar. It ferments more readily. It becomes converted into acid more quickly, and therefore more care should be taken to avoid starch than to prohibit ready-formed sugar. Lessen the quantity, then, of starch, as well as sugar, which your patient is taking.

There can be no question as to the benefit which frequently follows the use of the mineral acids, for the oxalate of lime will often entirely disappear during the use of the acid. Without doubt this sometimes follows in consequence of the removal of the cause; but you will find the oxalate of lime frequently return when the acid is discontinued, and you will often be disappointed at the frequent relapses of your patient. This may result from a return of the indigestion; but it very probably is also caused by the mineral acid passing off in the urine, and hindering the appearance of the oxalate of lime. Some easy experiments, which you can repeat, will, I think, explain to you the return of the oxalate of lime on the omission of the mineral acid.

If you take the fresh urine of a patient who is passing oxalate of lime; if you divide it into five portions, leaving one portion to itself, and adding different acids to the other four portions—as, for example, a small quantity of acetic acid to one, nitric acid to another, hydrochloric acid to a third, and sulphuric acid to the fourth—and leave them for twenty-four hours before you examine them, you will find that the natural urine will give octohedral crystals. The urine, acidulated with acetic acid, will also give plenty of crystals; but the other three portions, acidulated with the mineral acids, will give no oxalate-of-lime crystals. The crystallisation, if not altogether prevented, will be much retarded.

It is highly probable, that the same thing happens when the mineral acids are taken as medicines. After a time, they pass off in the urine, and thus hinder the oxalate of lime from making its appearance until the acids are stopped, when the crystals may reappear. But, even in this point of view, the mineral acids are valuable palliatives, playing the same part, as regards the deposit of oxalate of lime, that the alkalies play in the uric acid deposits. But, in addition to this palliative action, the mineral acids have a curative action acting directly on the stomach. It will be well shortly to take each acid separately, and not altogether, although they are sometimes so prescribed. Thus, you may occasionally meet with sulphuric, nitric, and hydrochloric acids in one recipe; and constantly you will find two of them in the same prescription. In fact, nitro-muriatic acid has come into more general use than any single acid.

1st. We will take *Sulphuric Acid.*—You see the best illustration of its use in colliquative perspiration, in menorrhagia, in hæmoptysis, and, more lately, in diarrhœa. It acts as an astringent. It is said to suppress the excessive secretion of pus from an open abscess. When you require an astringent action and a mineral acid, use dilute sulphuric acid. It should be taken when the stomach is empty, an hour or two before food.

2ndly. *Hydrochloric Acid.*—All the most satisfactory experiments show, that the stomach liberates this acid for the purposes of digestion, and, therefore, if you want a mineral acid to assist digestion, give hydrochloric acid. In the convalescence from many diseases you will find the advantage of giving this acid just before each meal.

3rdly. *Nitric Acid.*—This acid in large doses was formerly used as a remedy for syphilis. It was considered to increase secretion; to act on the liver like a mercurial medicine; even it was said to excite salivation. It is believed by some to act on the bowels, even when administered in baths. Hence nitric acid is the opposite of sulphuric acid in its action.

The rule, then, which I have formed is, sulphuric acid to astringe, hydrochloric acid to promote digestion, nitric acid to promote secretion.

In India, nitric acid was much used as an external application in baths for disease of the liver. Dr. Scott thought that its efficacy was increased by the accidental presence of hydrochloric acid. The combination of the two acids was therefore tried, and a more energetic action was said to have been obtained than by nitric acid alone. Mr. Martin has given the following formula for the nitro-muriatic acid bath:—Three parts of hydrochloric acid, two parts of nitric acid, mixed with five parts of water. Three ounces of this mixture to each gallon of water in the bath. Usually five or six gallons are requisite. The bath is usually taken at 96°, twice daily. The acid is to be renewed every week. Now, the positive proof of the benefit of this treatment is still wanting. At first it was employed in the general hospitals (there is even a formula for it in our Hospital Pharmacopœia), but now you rarely if ever see it employed. Many individual cases have been mentioned to me by Mr. Martin as conclusive, but still the question of its efficacy is not proved. Far less is it determined which substance is the active ingredient. Mr. Wallace, of Dublin, used chlorine baths, instead of the nitro-muriatic acid, and maintained that his results were more constantly favourable. Certainly, this use of a single ingredient is more likely to lead to accuracy than the method of using many substances internally or externally at the same time. The composition of the nitro-muriatic acid varies according to the temperature at which the acids are mixed or kept. There are at least four substances present—nitric acid ($NO_5\ HO_2$), muriatic acid (H Cl), chlorine (Cl), hypo-chloro-nitric acid ($NO_2\ Cl_2$); and perhaps a fifth substance, chloro-nitrous acid (NO_2 Cl). The proportions of these different substances vary according to the temperature at which the

nitro-muriatic acid is made and kept. I am far from being able to tell you what is the action of each of these different acids. Though the highest authority may be quoted for their conjoint use, yet, if you wish to prescribe rationally and not empirically, you will not use nitro-muriatic acid. For to which of its ingredients will you ascribe its efficacy? Or, as the proportion of its ingredients is so liable to vary with the mode of preparation, how can you tell what you are prescribing? If we shall ever gain any knowledge of the action of medicines, it will be by giving one substance, and only one, at a time. If our therapeutics are ever to advance, the first step will leave such combinations behind. Give nitric acid, give hydrochloric acid, give chlorine, or give hypo-chloro-nitric acid; but do not give all four together, until the separate action of each is well known.

In the use of any of the mineral acids, some care must be taken regarding the action of the acid on the teeth. I have known patients who for years had been free from toothache, suffer again in consequence of the action of an acid ordered for the treatment of the oxalate of lime in the urine. The acid may be taken through a straw or tube, but the simpler way is to wash the mouth with a teaspoonful of sp. ammoniæ arom. in a glass of water immediately after the medicine is taken.

If taken when food is present in the stomach, the mineral acids probably all assist only in dissolving the albuminous food, and have no medicinal action whatever. For the relief of indigestion they should always be given on an empty stomach, and so diluted that they cause no pain or uneasiness. The primary action of all the mineral acids is probably to lessen the irritability of the stomach; to render it less sensitive of the irritation which may be caused by the food. Perhaps, also, the quantity of acid thrown out by the stomach itself is thereby lessened. If an overdose of the mineral acids is given, the opposite effects are produced. Still, if the excessively acid taste permitted, far larger doses might be given than are usually prescribed. In my experiments ('Philosophical Transactions,' 1850) on the effect of sulphuric acid, I constantly gave a drachm of dilute acid, sp. gr. 1108, in an ounce and a-half of water, thrice daily, without the slightest uneasiness; but, on the other hand, ten minims of the same acid in the same quantity of water have caused uneasiness to some patients.

In many cases of oxalate of lime in the urine, I have given carbonate of ammonia when the mineral acids have not agreed, and in doses of from five to ten grains. I have been well satisfied with its effect; it relieves the flatulence, and prevents its return. The great nervous depression which exists in some patients with oxalate of lime has also been an indication for the use of this remedy. Quinine and steel, sea-bathing and the shower-bath, bracing air and healthy exercise—in short, everything which can improve the general health, will be found beneficial for the indigestion which leads to the formation of oxalate of lime in the urine.—*Med. Times and Gazette, May* 6, 1854, *p.* 454.

138.—MODES OF EXHIBITING COD-LIVER OIL.

[The practitioner constantly meets with difficulties in exhibiting this remedy. The following hints are valuable :]

Cases in which difficulty occurs may be divided into the following classes :—1. *Those in which the Nauseous Taste of the Oil forms the Obstacle.*—In these the use of the pale oil will generally obviate the difficulty; it is, however, four times the expense of the brown, and is more liable to be adulterated, which are great objections. The taste of the brown oil may often be concealed by taking it floating on some bitter menstruum. A wine-glassful of strong coffee, of ginger wine, of infusion of quassia, or perhaps, best of all, a quinine draught, containing a drachm of the tincture of orange-peel, may serve this purpose. The oil may be stirred up in a little hot milk, and swallowed so warm that the sensation of heat overpowers the taste. Should these expedients fail, the patient may be instructed to put into the mouth a teaspoonful of marmalade or of black currant preserve ; and, having well lubricated all parts with the sweetmeat, so as to fully absorb the attention of the gustatory nerve, then swallow the oil. Advantage frequently results from closing the nostrils when taking the dose. 2. *Those in which the Oil excites Sickness, and is quickly rejected by Vomiting.*—Many of the expedients mentioned above will obviate also this source of difficulty, more especially the use of bitters. Very few cases indeed will resist the influence of hydrocyanic acid and bismuth exhibited three times daily for a few days preparatory to the trial of the oil, and continued during its employment. Patients should be directed to eat a little dry biscuit or bread-crust before the oil, and then to take it floating on a cup of the coldest spring water. If these fail, as a last resource, the dose should be given in the recumbent posture, that is, in the morning, an hour or two before getting up, and in the evening after going to bed. This last suggestion is one emanating, we believe, from Dr. Birkett, of the City Chest Hospital, and often answers very satisfactorily. 3. *Cases in which the Oil cannot be Digested.*—This is a large and very important class. Patients complain that they have a great repugnance to the oil, that it makes them feel sick for hours afterwards, though seldom causing actual vomiting; that everything they take after it seems to taste of it, and that thus all relish for food is destroyed; that the oil "rises," either oily or with a most nauseous acid flavour. They frequently have bilious attacks; and, for a day or two in each week, probably the repugnance to the remedy is so great, that they are quite unable to overcome it. If pushed under these circumstances, the oil does more harm than good; there are, however, extremely few such cases in which careful attention to the digestive organs will not enable its administration to be successfully conducted.

We copy the following formula from the Pharmacopœia of the City

Hospital for Diseases of the Chest, where it is in general use for the relief of the condition alluded to :—

"℞. Rad. rhei ℥iij.; rad. zingiberis ℥ij.; rad. gentian. ℥iss.; sod. carbon. ℥iij.; aquæ pur. lb. viij."

The roots having been cut into small pieces, the infusion is made with cold water, and, after standing in a cool place for about twelve hours, is strained. The mixture is clear and bright, and not in the least disagreeable to take. In cold weather it keeps well; but in summer the addition of some tincture is necessary to prevent it from becoming thick. If cough be present, it is usual to combine with each dose from half a drachm to a drachm of paregoric; if sickness, from two to three minims of the hydrocyanic acid; and if the signs of atony, a small quantity of the tincture of gentian, calumba, or hop.

By the use of this mild stomachic (a wine glassful thrice daily) for a week or two before commencing the oil, and then continuing it during the exhibition of the latter, many patients have been induced to bear it with advantage who had failed in other prior attempts to do so. The mixture is so mildly aperient that it almost never purges, and it may be continued for months together with the effect of improving most markedly both the appetite and the digestion. 4. *Cases in which the Oil, although taken easily, cannot be borne in full Quantity, and does not appear to produce much Benefit.*—In many cases of phthisis coming under this head, the combination of tonic medication with the use of the oil often answers well. So generally, in fact, is advantage derived from such combination, that at the Hospital for Chest Diseases there are very few patients indeed who take the oil alone. In almost all it is exhibited together with either the stomachic mixture above noticed, or some form of tonic. The favourite tonics are the sulphates of quinine and iron, (gr. j. with gr. ij. ter die), or the sesquichloride of iron. The latter is extensively prescribed with the mineral acids in infusion of quassia, or, if the stomach be delicate, in the following more elegant form, which is a prescription of Dr. Risdon Bennett's :—

℞. Tinct. ferri sesquichl. ℥x.; acid. nitrici dil. ℥x.; syr. zingib. ℥ss.; aq. menthæ viridis ℥j. Ft. haust.

Notice has been made repeatedly in our hospital records during the last two years of the practice of combining the use of cod-liver oil with that of mercury in small doses long continued, which prevails extensively at the Hospital for Skin Diseases in cases of lupus and cutaneous struma, and at several other Institutions, in the treatment of chronic disease of the joints. This kind of treatment is becoming increasingly prevalent, and is certainly very applicable to many forms of strumous inflammation. The plan of giving the oil to counteract the depressing effects of a mercurial course for the cure of syphilis in cachectic states of the constitution, has also been previously mentioned, and is well worthy of being borne in mind.—*Med. Times and Gazette, May* 13, 1854, *p.* 487.

139.—*How to Test the Genuineness of Cod-liver Oil.*—We possess in sulphuric acid a simple re-agent by which genuine cod-liver oil is easily distinguished from most other kinds of oil: a few drops of this acid produce, in olive oil, a dirty grey colour; in poppy-oil, a deep yellow colour, approaching brown; and, in ordinary fish-oil, a deep brown colour; while, poured drop by drop into cod-liver oil, sulphuric acid produces in it a centrifugal movement, particularly where the drops fall, and, at the same time, a beautiful violet colour, which changes to purple the moment the mixture is agitated, and, ultimately, to a rich sienna brown. This colour is no doubt due to the action of the sulphuric acid on the constituents of the bile contained in the oil. The action of the re-agent is best seen by adding one or two drops of concentrated sulphuric acid to about half a teaspoonful of the oil, spread out upon a white porcelain plate.—*Lancet, July* 29, 1854, *p.* 83.

140.—*Urticaria treated by Quinine.* By James Startin, Esq.—[This gentleman has found but few cases to resist the use of quinine. The following case will illustrate his treatment.]

A severe case, in which the eruption had come out daily for the last six months, presented itself a few days ago. The patient was a married woman, of middle age, and of nervous temperament. The following was the prescription ordered:—

℞. Quin. disulph. gr. xij; am. sesquicarb. ℥j.; magnes. carbon. ℥ss.; aq. pur. ℥viij. Ft. mist. ℥ss. ter. die sumend.

The quinine in this formula is of course undissolved, and the magnesia is added in order to suspend it. To relieve the itching of the eruption, a lotion containing the dilute nitric acid was ordered to be used. With regard to the latter, it may be worth remarking, that Mr. Startin believes it quite as useful as the hydrocyanic acid for the relief of tingling, &c., while it is very much less expensive.—*Medical Times and Gazette, May* 13, 1854, *p.* 487,

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141.—*Novel mode of applying Chloride of Zinc.* By E. Cock, Esq.—In many cases, it is of great importance, in the use of chloride of zinc as a caustic, that it should not run. Such a one is at present under the care of Mr. Cock, in Guy's Hospital, in which it is being used to destroy a polypoid growth in the nose, part of which has been extracted. The spot to which the application is made is deeply placed in an enormously dilated nostril, and it is absolutely necessary to limit its action to the part affected, and, at the same time, desirable that it should there act freely. A paste made with flour or bread crumb was first tried, but this was very inconveniently moist, and liable to run. Mr. Cock now uses plaster of Paris, which answers admirably. A paste may be made of suitable consistence, and which does not afterwards become in any degree more liquid. It is laid on a piece of lint cut to

the wished-for size, which is then carried into the nostril, pressed on to the diseased part, and left in. It should be remembered, that the long-continued pain which often follows the use of escharotics, is from their gradual extension to parts not at first involved. The duration of the pain. after the use of chloride of zinc in this way, is generally much less than if it be used in a paste more liable to liquefy.—*Med. Times and Gazette, May* 13, 1854, *p.* 487.

142.—ON NEURALGIC HEADACHE.

By Dr. P. J. Murphy.

Neuralgic headache is synonymous with those headaches described by some old authors as hemicrania, by others as clavus hystericus, and by Dr. Graves as hysterical congestion. It is *peculiar* to females, and to females during a certain period of their existence only—from puberty until the final cessation of the menstual secretion. Dr. Graves gives a graphic description of the symptoms and of the injurious effects of the usual routine treatment. He calls it hysterical congestion; but he seems not to have understood its true pathology. There is no doubt of its being hysterical, but there is no congestion, for the seat of the pain is in one of the nerves of the scalp, which can be easily proved by a slight examination, and it is therefore an external headache. The error may have arisen from his having met with cases where this headache was in combination with the anæmic headache. The proper name which should be bestowed on this headache, in order to facilitate the diagnosis, is spinal irritation of the sub-occipital nerve. Spinal irritation is beginning to be understood in this country; we are indebted to a French physician, M. Valleix, for the discovery. Since then many other disorders, such as irritable mammæ, pleurodyne, and neuralgic headache, are discovered to originate in functional derangement of the spinal cord; and I believe whoever will carefully compare these disorders with cases related by Dr. Tilt must come to the conclusion that they are nothing more than symptoms of subacute ovaritis. They are hysterical disorders, and *hysteria is subacute ovaritis*, which displays its phenomena on the sensitive and motive nerves of the spinal column.

On comparing the neuralgic headache with the phenomena of spinal irritation in other parts, we find how exactly they coincide. Like spinal irritation, it is a form of hysteria, and therefore peculiar to females. It is not only peculiar to females, but attacks them only during the menstruating period of their existence—that is, from about the thirteenth to the fiftieth year. It is exacerbated just previous to menstruation, makes its first attack on the left side, and rarely passes over to the right side.

Cause.—As this form of headache is peculiar to the female sex, it must therefore have its origin in some organ peculiar to them; and as

it is felt during a certain period of existence only, the organ must have the performance of its functions limited to that period. As there is no organ by which these two facts are explicable, unless the ovarium, it is unphilosophical not to conclude that the disorder proceeds from the ovarium. There is certainly also the uterus, but the functions of this viscus cease on the removal of the ovaria. We daily meet with the uterns inflamed, ulcerated from cancer or cauliflower excrescences, distended by hydatids or pregnancy, producing moles and polypi, but none of the phenomena of spinal irritation are present. In the married female who bears children regularly it is scarcely ever known. Before the commencement of menstruation, or after its termination, it is eqnally rare. What is the state of the ovarium I do not pretend to affirm. If inflammation, yet it has often yielded to tonics; it may depend on moral causes, but such an explanation has never satisfied me. An accumulation of fæces in the rectum has appeared to me as occasionally the source of irritation; in a few cases I think it was traceable to ascarides in the rectum. We witness the action of cold in paralyzing the trunk of a motor nerve, the portio dura, as it escapes from its cranial foramen, but cold cannot be a cause of this headache, otherwise why should not the male sex equally suffer.

Occasionally spinal irritation, in other parts, has been observed earlier in life, but I have not met with the headache; and, as the headache has occurred some years before the appearance of the menses, so I believe it possible it may arise a few years after their total cessation. The headache resembles spinal irritation, also, in a curious and hitherto unexplained phenomena: *commencing* on the left half of the body, we occasionally meet with it also on the other side; but I have never discovered that it began there, nor is it ever restricted solely to that side. When both sides are attacked they are unequally so, the left being by far the more painful. As another proof of its being spinal irritation, if further proof be necessary, we find it under two distinct forms, and these forms are easily distinguishable by the nature and extent of the pain. In the one it is confined to the exact tract of the sub-occipital nerve, it is lacinating or shooting, intermitting, and chiefly felt at its termination in the integuments of the temporal region; when severe in this spot it is the *clavus hystericus*. When the whole course of the nerve and its branches are implicated the entire left side of the scalp is very tender, sometimes exquisitely so; this is the hemicrania. It is singular how much this disease is confined to the left side of the head; we find such to be the fact in ninety-nine cases out of a hundred. It seldom reaches the aggravated form of clavus hystericus without being accompanied with other well-known hysterical symptoms, which, of course, facilitate the diagnosis.

Diagnosis.—This headache attacks females exclusively. I have never heard nor read of men suffering from this kind of headache. It is only during the menstruating period of life that even females are liable. The pain is referred to the left side of the head; it is worse

on the approach of the menstrual flow; it is found in the track of the sub-occipital nerve. The course of this nerve is well known; it accompanies the sub-occipital artery, emerging from the spinal canal; it passes along the back of the head, midway between the mastoid process and the mesial line, sending branches to the integuments which cover the parietal protuberance, and terminating in the temporal region. Its course, from its exit to its termination, can oftentimes be accurately ascertained, from the pain induced by pressing upon it. Although the head suffers, pressure may not always produce the pain, for it is intermitting. In general, however, pain may be thus detected in one of three places: on the left side of the neck, where the head and vertebræ join, at the parietal protuberance, or in the temporal region; when concentrated in the last spot it is the well-known clavus. It is sometimes painful in all three, and, sometimes in its whole track. It is, however, rare that the tenderness is absent in the occipital region. The part suffers more when pinched than when pressed. When the branches as well as trunk suffer, we then have hemicrania—a most painful form, less intermitting than the other, and preventing the unfortunate girl from lying on the affected side. It is more commonly met in the unmarried female, from the twenty-second to the thirty-fifth year, but the married females who are childless do not escape.

This headache is chronic, intermitting, may continue for days, weeks, or months, then subside, and return after the lapse of months, or even years. A first attack is seldom felt before the twentieth year, nor after the thirty-fifth. The pain is generally of a shooting kind, darting from the neck towards the temple, and never towards the neck, by which it is easily distinguished from odontalgic pain. Neuralgia of the left mamma, (irritable breast,) or of the seventh or eight intercostal, (pleurodyne,) frequently co-exists. It is sometimes found in combination with the anæmic, but more rarely with the congestive headache. From caries of the body of a vertebra it is easily distinguished by the pain being superficial, being confined to the left side of the spine, by its not becoming worse when the head is flexed on the chest, nor by jumping, nor by pressing the head against the spinal column.

This neuralgic pain sometimes accompanies the rotated spine. It is singular how often toothache is mistaken for headache, especially for this form. In both the pain is described as shooting in the course of the nerves, but in toothache the pain shoots towards the neck and ear, leaves no tenderness of scalp, never goes so high as the parietal protuberance, and is more correctly discovered by learning that a paroxysm is brought on by food, sometimes when warm, at other times when cold.

Treatment.—If the disease be not complicated, we can promise relief. The bowels should be kept open by regulated diet, and by aperients, such as castor oil, olive oil, lenitive electuary, powdered

rhubarb, soluble tartar, or the compound rhubarb pill. If the bowels are obstinate, an enema of a pint of cold water daily answers the double purpose of removing the contents which may irritate the ovary, and as a local application to the organ chiefly in fault. The cold hip-bath is a valuable remedy when the constitution is vigorous, but all these things are inferior to sea-bathing. Stimulants should be abstained from, employment should be found for mind or body, but physical efforts are preferable. The sedentary position required by the needle, especially in solitude, is very injurious. A sinapism over the exit of the nerve gives great temporary relief; a vesicating plaster of cantharides is better, but it oftentimes leaves a mark, and therefore, on account of sex, age, and position in life, may be objectionable. A croton-oil liniment, made with one drachm of oil and one ounce of camphorated tincture of opium, and rubbed until pustules appear, is preferable, as it leaves no permanent blemish. The belladonna plaster, mixed with powdered opium, or a liniment of extract of belladonna, rubbed with mucilage, are useful and unobjectionable remedies. Speedy relief is occasionally afforded by veratrine or aconitine ointment, made with from four to six grains to half an ounce of spermaceti ointment. The finger used in rubbing should have a piece of bladder interposed.

One ounce of tincture of aconite with seven ounces of rose-water, is a safer remedy to trust to inexperienced hands than the veratria. The internal medicines are not so easily chosen. Tonics are frequently required, and they may be combined with anti-hysteric remedies. The disulphate of quinine may be exhibited in a strong infusion of valerian; compound iron pill, with assafœtida in large doses, is very beneficial. If there be irritability of stomach co-existing with profuse menstruation and leucorrhœa, pills of valerianate of zinc, half a grain three times a day, with one drop of creosote, answer many intentions. If there be much debility, the sulphate of iron may be combined with infusion of valerian and ammonia, or the ammoniated tincture of valerian may be prescribed. The pain is sometimes so acute that some relief is quickly demanded, and half a grain of morphine will lessen the pain for a while until other remedies have time to act. For the leucorrhœa one drachm of acetate of zinc to one pound of distilled water is useful as a lotion. But we are sometimes perplexed, for the tonic treatment is not the best for a full plethoric female; leeching or even general bleeding is required, but the cases are rare which require general bleeding.

If the patient be not very weak, and there is much leucorrhœa and menorrhagia, the treatment laid down by Dr. Tilt for subacute ovaritis should be adopted. He leeches in the menstrual interval, and then blisters the iliac regions: but as his work is universally read, the treatment is well known. Sea-bathing, when practicable, should never be omitted.—*Lancet, May* 20, 1854, *p.* 541.

143.—ON CHRONIC AND PERIODICAL HEADACHE.

By Dr. E. H. Sieveking. (Read before the Harveian Society.)

Occasionally it almost appears as if an inverse ratio existed between the danger threatened by a given disease and the pain accompanying it. Certain it is that many of the most fatal maladies are not marked by a proportionate amount of suffering, and that many which are ushered in by bodily anguish lose this feature in a great measure as the "day of nothingness" approaches. Pain is a valuable indicator to the physician of hidden processes; but, at the same time, it is one which in its turn requires to be measured, in order to be appreciated by the observer at its real value, and for which, unfortunately, we possess no standard, except that afforded to us by an intimate knowledge of the individual before us, or a vague, empirical acquaintance of human nature at large. An "odynometer" would be of vast service in reading the history of disease; but we must advance much beyond our present understanding of the nervous system before we can expect to meet with an invention of this kind. Whether, however, the pain be represented by a known quantity of greater or less magnitude, it is invariably sufficiently unpleasant to the sufferer to desire some means of speedy relief, and this very natural wish is readily responded to by sympathizing friends or more scientific Æsculapii. But the apparent urgency of the symptom is the very feature which often induces the patient to employ his remedies inconsiderately and at random, while it places him at the mercy of persons who are intent upon their own advantage rather than upon the other's relief.

Pain is the sentinel of health. Pain, to employ Romberg's oriental imagery, is the prayer uttered by the nerve for healthy blood. Pain was placed by our Maker as the beneficent guardian of this mortal fabric, a warning friend more often than an avenging angel. But none of our feelings or our emotions are isolated; nor is there one which is not, more or less, under the domination of the higher powers of the mind. Though pain be but a physical manifestation, the actual suffering may be much exalted or diminished by the intellectual and moral force brought to resist its encroachment. This is an element that we practically regard every day, in estimating the importance of the symptom in this or that case; but as we are commonly free from suffering at the time we have to judge our patient's condition, we are rather apt to demand a greater exercise of self-command and resolution from him than may be quite just; nor is it always the case that those who show least sympathy to others have themselves the greatest powers of endurance in the time of need. The significance of pain, then, varies in different individuals, as it varies in different classes, or in the same individuals at different ages, no less than its expression. The susceptibility to pain is probably greatest immediately after birth, though the actual suffering cannot have attained its climax until the mental powers are so far developed as to allow of the feeling of con-

scious apprehension. During the first years of life, spasmodic action appears to be the form in which the nervous system, as it were, responds to the tax made upon it. As life advances, the capability of endurance increases; but an excess of pain is met by a temporary arrest of the powers of perception, and the sufferer is relieved by syncope. I need not now enlarge upon the difference displayed in this respect by the two sexes. We all know the fortitude exhibited by those who, though more fragile in form and constitution, appear, in times demanding a moral effort, to bear pain better than the sons of Adam; and yet these sons, using their prerogative of power, have made it a by-word to bear pain like a woman. It would almost seem as if she were trained, by the many minor aches that she is subject to, to the endurance of great suffering; they certainly contribute not a little towards rendering her the sympathising comforter, whose very look is a healing balm in the dark day of weariness and pain.

I have ventured to make these preliminary remarks as an excuse for devoting such consideration as the necessary limits of the occasion will permit, to some of those morbid states which are characterised by pain, confined to one—the most important—part of the body, the head. Headache, like pain experienced elsewhere, is not a disease, but a symptom of disease; and yet it is so commonly the only sign recognised by the patient, that it is constantly exalted to the rank of disease itself. The one great difficulty already alluded to, in appreciating the value of pain as a symptom, is, that it belongs entirely to the class of subjective phenomena; it is in no way physically tangible. The difficulty in the present instance is much enhanced by the inaccessible character of the organ or organs belonging to the head. While its presence in the abdomen, thorax, or extremities, may be more closely investigated, and its accompanying symptoms more accurately defined by means of direct appliances, we are much more limited to what the lawyer terms circumstantial evidence, in order to establish its intensity, its character, its relations to other morbid phenomena, when affecting the head. Much of what we regard as acknowledged fact in this domain of pathology is yet but hypothetical; there is still more than any one has yet attempted to withdraw from the range of mere conjecture. But while this is only an argument in favour of our making the subject one of earnest consideration, it warns me not to increase the obscurities already surrounding it by increasing the hypothetical structure. I have carefully gone through the numerous cases which I have recorded in my own practice, in which headache was the prominent symptom, and to some of the conclusions at which I have thus arrived I shall beg your considerate attention.

A question that meets us on the threshold of the subject is one that fortunately no longer admits of an ambiguous answer. It is, whether the absolute amount of blood contained within the cranium varies. The practice of all ages negatived the supposition, that the quantity of blood within the skull was always the same, until the apple

of discord was thrown in by some experimenters, among whom Dr. Kellies' name stands foremost. He has, however, been completely refuted by Dr. Burrows, who meets Dr. Kellies' views by experiments and arguments of a most convincing character. Dr. Burrows' summary is, "that experiments and physiological considerations lead us to the conclusion that the quantity of the blood within the cranium is extremely variable at different times and under different circumstances." This statement is no way opposed by the fact, that the total contents of the cranium must at all times be a nearly constant quantity; for there are various mechanical provisions which are evidently destined to keep up the balance when a change in the amount of one or the other constituents takes place. One of these is the meningeal serosity which may freely pass from the spinal to the cerebral cavity, and is immediately under the influence of atmospheric pressure in the former. Another is the venous *rete mirabile* contained in each lateral ventricle, known to you as the choroid plexus, and capable of very considerable distension or contraction, according to the amount of blood contained,—a safety-valve of very remarkable construction, and capable of aiding the system, not merely as a receptacle of blood, but also by the secretion of various matters, the accumulation of which would be injurious to the constitution. We allude not merely to serum, but to the concentric bodies containing phosphate of lime, and to epithelial growths that are so frequently found in or about the plexuses. Another provision consists in the extreme elasticity of the white matter of the brain, secured by its canalicular structure, no less than by what my researches have led me to regard as the peculiar conformation of the bloodvessels of this portion of the brain. This last point is not one for present consideration; but, in the case of any one having turned his attention to the circulation within the brain, I would request him specially to attend to the arrangement of the minute vessels, with a view to determining whether or not they present enlargements resembling reservoirs, fed and emptied by numerous conduits of much smaller dimensions than themselves.

Nothing is of more importance in reference to the pathology and therapeutics of the head than clear and well-defined notions on the physiological subject of the circulation within the cranium; for, among the various sources of medical scepticism, no one is more puzzling or more destructive of logical practice than a contradiction between the doctrines of physiology and the daily practice of medicine.

What Hippocrates said of spasm—that it results either from fulness or emptiness, or to use more modern terms, from hyperæmia or anæmia,—applies equally to headache; but, to embrace all the causes of this affection, we must add a third element, which, though most commonly complicating one of the above circumstances, is not necessarily included in them, viz., a change in the constitution of the blood. Dr. Bennett is of opinion, that "headache is always occasioned by pressure, which probably arises from local congestions of blood, although

the causes tending to these, or the means by which they are produced, are yet unknown." This view, if correct, would simplify our pathology of the subject, as well as our treatment; but, while it applies to a majority of the cases of headache that come under our notice, it is far from universal, and, unless received with considerable qualifications, would perpetuate the exclusively antiphlogistic proceedings from which therapeutics appear to be emerging. This remark is borne out by the experience of Sir Henry Holland, who, in speaking of headache, says, that "many of its varieties are as little defined by our knowledge of their causes as by the terms used in describing them; though probably the greater number depend on different conditions of the circulation through the brain; of which conditions, that of congestion or retarded circulation, varying in degree and in the vessels in which it occurs, is presumedly the most frequent." The same author, adverting to vertigo as a frequent concomitant of cerebral affections, speaks of it "as a symptom which often conveys alarm, from the idea of pressure on the brain, and leads to immediate depletion under this view. In some cases," he continues, "the inference and practice are just and beneficial; but there are others, (and these, as I think, of frequent occurrence), where vertigo is the effect of causes wholly remote from fulness or over-action, being, in fact, a step towards syncope, and a proof of exhaustion of the nervous power; here we require, not bleeding, but cordials, to restore the brain; and a wrong practice may lead into serious danger."

The three essential points upon which we would insist, as requiring our first consideration, in forming an opinion upon an individual case of cephalalgia, are, whether the *causa proxima* consists in an increased afflux of blood, in a diminished amount of blood, or in a specific dyscrasia. None of these matters can be discussed otherwise than hypothetically, without some previous history of the case; the external appearance of the patient, though a guide, is often fallacious; and though we might, in marked instances, determine, by the light of empirical experience, whether we have to deal with hyperæmia or anæmia, the frequency with which dyscrasic conditions of the blood constitute an essential element in the causation of headache is so great, as to greatly influence the results of our practice, according as we attend to it or neglect it. Romberg, in speaking of the difficulties attending the physical exploration of the brain in cephalalgia, which he treats of simply as hyperæsthesia, states, that "one means of approach has been overlooked which we ought certainly to avail ourselves of: it is a fact, that during every vigorous and long-continued act of expiration the brain is elevated, the cerebellum being pressed against the tentorium, the cerebrum against the cranial bones; the old surgeons, acting upon a knowledge of this circumstance, recommended their patients who suffered from penetrating wounds of the cranium to cough violently, or sneeze, in order to promote the discharge of blood or pus. We may therefore employ continued expiration, or holding the breath

during expiration, in cerebral diseases, especially if it affects the surface, as a sort of substitute for the external pressure, which we so frequently have recourse to in the exploration of the abdomen or thorax. The patients alluded to generally complain of the headache being brought on by straining or defecation. For the purposes of diagnosis, we cause the patient to imitate this effort, by holding the breath for some time during expiration, while the abdominal muscles are contracted. This at once brings on the pain, or if it was present increases it to the utmost. The same occurs in screaming, coughing, and vomiting. Similar experiments may be instituted during inspiration, during which the brain falls and approaches the base of the skull; we may thus obtain some information on the diseases affecting the base of the cerebrum and cerebellum.

The form of headache that probably occurs most frequently to every practitioner is that which affects the female in connexion with some disturbance of the uterine and ovarian functions. It is so common, and the prevailing tendency to set down the complaints of the softer sex under the list of hysterical affections, is so general, that I would at once warn against a too hasty assumption of the sexual origin of the pain; for an error in diagnosis entails a serious error in treatment; and even in the event of the sexual influence being established, a very different proceeding may be advisable in different cases.

Although I am not prepared with a classification of the various forms of cephalalgia that shall embrace every feature and complication that presents itself to us in practice, I think, that by keeping in view the *causa proxima* of the increased, diminished, or altered blood, and engrafting thereon whatever our enquiries may establish regarding the exciting causes, we may arrive at a tolerably correct view of the nature of the malady in the individual instance. As I have before observed, several conditions may be complicated with one another, and thus obscure our view at first; but, by care, we may always succeed in laying hold of a leading feature, round which the minor traits are grouped, and having done so, the principle both of diagnosis and of treatment is established. Accordingly it appears convenient to divide the exciting causes of cephalalgia into three classes,—those directly affecting the head, those proceeding from the chylopoietic viscera, or the organs of nutrition, and those taking their origin in the sexual apparatus. Among the causes of cephalalgia residing as it were in the cranial contents, or affecting them without the intervention of other organs, the foremost are mental and intellectual excitement carried beyond the normal limits of healthy stimulation; it may act by a shock, as in a child that is frightened or suddenly carried into a brilliant light, or made the gazing-stock of pseudo-admiring friends at an hour when it ought to be in the land of dreams: it may act by the continued strain upon the reproductive energies of the earnest student diving into the secrets of nature that are revealed to none but such as are prepared to sacrifice themselves on her altars; it may, after days and nights of un-

remitting toil, prostrate the poor milliner, who, with a weary heart and aching eyes, uses her very life-strings to earn bread for the invalid parents. A direct physical stimulus is anything that, through the organs of smell, of hearing, or of sight, gains admission to the perceptive faculties. The excitement may produce but a temporary result, commensurate with the powers of the individual: or it may find a favourable nidus, and the deranged action once set up may be propagated until broken by some greater countervailing power. Many forms of epilepsy are nothing but the spasmodic expression of this derangement; and for private use I constantly employ the term cephalalgia epileptica, as indicative at once of what I regard as a cause and a tendency, occurring possibly in a subject in whom the epileptic paroxysm has been manifested merely by slight vertigonous attacks, by a single attack in former times, or by some spasmodic action that alone would not be regarded as of an epileptiform character. The pain in this form of headache may affect any part of the head, but it is frequently limited to a spot at the vertex; and, where that is the case, I have found marked benefit from making the attack directly upon the apparent seat of injury. Thus, in the case of a needlewoman in whom intense chronic cephalalgia and partial blindness has been produced by overwork, nothing has afforded so much relief as the application of powerful counter-irritation to the vertex, where the pain is limited to a space the size of half-a-crown, and the hair has fallen out. Her constitution is otherwise good, and no medicine avails beyond the occasional exhibition of a warm purgative. The constant action of the cause prevents even the chance of a cure in her instance. In many causes the avoidance of the cause is sufficient to remove the pain. In some, speedy assistance is demanded, and we commonly fly to counter-irritation and purging. But these remedies are not always indicated. The condition of the brain may be solely a state of hyperæsthesia, or, in other words, a state of extreme sensitiveness, unaccompanied, as we should suppose it to be, in cases indicating a derivative procedure, by vascular repletion. Thus, in the case of a young authoress, who, for a year and a-half, had been subject to frequent paroxysmal headache, with pains spreading along the distribution of the fifth pair, unaccompanied by any visceral or uterine disorder, what certainly looked like a permanent cure was effected by a brief exhibition of the citrate of iron aud quinæ. But where the nature of the case is not clearly apparent, we cannot be too careful to solve the problem to the best of our ability, before adopting a definite line of treatment. The presence or absence of vertigo in younger people, and the state of the heart and circulating organs, the previous occurrence of epileptiform seizures in the young and middle-aged, the previous occurrence of apoplectic symptoms in those advanced in life, must be attended to, and their bearing well marked. Our conclusion may determine the life or death of the individual.

Among the causes that act by direct irritation of the brain, to omit

external lesions as not immediately bearing upon our subject, we find congestive states produced by previous disease of the lungs, as hooping cough, or emphysema. Catarrhs, which are frequently accompanied by severe throbbing frontal headache with a stillicidium oculorum et nasi, act partly by the implication of the frontal and sphenoidal sinuses, partly by the general febrile state of the blood acting as a special irritant to the meninges; the value of the mustard plaster, or in severer cases, the blister, applied to the nape of the neck, and accompanied by such other treatment as the special case may demand, sufficiently show that here the pain is not merely of a hyperæsthetic character.

Of the alterative or discrasic diseases, giving rise to headaches, by inducing direct irritation through the vascular current, or by exciting a local morbid action, which in its turn proves a source of irritation, the most marked are rheumatism and syphilis. Rheumatism affecting the head is frequently regarded solely as a source of pericranial pain, characterised by external tenderness and puffiness of the scalp. Romberg describes this form of headache as presenting an hemicranial and paroxysmal character, marked by a peculiar sensibility of single parts, especially of the forehead and vertex, the pain radiating from these in various directions. I do not find that authors allude to the possibility of an intracranial rheumatic affection; but I have repeatedly met with cases of cephalalgia in which no such external indications presented themselves, and in which the concomitant symptoms, though but feebly marked, the history of the case, and the anti-rheumatic treatment adopted, appeared to justify the conclusion that the dura mater, the fibrous envelope of the brain, was the seat of the disease.

To determine the question, the whole complex of symptoms must be taken into consideration. It is always unsatisfactory to establish our diagnosis by the result of our treatment; still, until we have very definite data for the former, we must be allowed occasionally to argue from the *post hoc*. Nor is it quite unreasonable to conclude from what we know of the action of certain medicines, that their successful application is *à tanto*, evidence of a definite derangement of the blood. Thus if, as in the case of a man, aged 34, who for six weeks had suffered from violent pain, affecting the entire of the head, attributed to sleeping in a damp bed and aggravated by the warmth of the bed, and who had been previously treated without benefit, we find guaiacum and iodide of potassium give speedy and permanent relief, few practitioners would question the reasonableness of the inference that his cephalalgia had been due to the rheumatic poison. Less difficulty is presented in determining the nature of syphilitic headache, though these cases are occasionally obscure, and do not always present such unequivocal signs as to enable us at first sight to determine their character. This is more particularly the case when there is an apparent history of previous rheumatism. When we see the syphillitic taint on the surface, the diagnosis is easily established; but this is not necessarily visible, and, without some palpable indication of lues, the admission of infection is

not readily obtained. The following abridged case illustrates these remarks :—M. A. W., aged 29, the wife of a plasterer, stated she had had rheumatism six or seven years previously, and had for several years been subject to severe headache, the pain being mostly at the vertex, and accompanied by a sense of something falling in the head from back to front, or of bursting. From the absence of other cause, and the previous history, I set it down to rheumatism, and treated it with iod. pot. This gave partial relief, and I continued the treatment on the assumption of its being rheumatic disease for about six weeks. I then, however, clearly established the existence of syphilitic secondary symptoms, and after a course of mercurial inunction, followed by iod. potass. and tonics, the cephalalgia entirely disappeared, with the syphilitic ulceration. I forbear multiplying cases, as an extensive range of subjects bearing upon the main question is yet before me, too large in fact to allow of more than a cursory notice.

I proceed to consider the varieties of headache in which the condition of the chylopoietic viscera, and the organs of nutrition is more particularly at fault. The terms cephalalgic, biliosa, crapulosa, saburralis, gastrica, and others, are used to designate this form of cephalalgia; while the vernacular, bilious, or sick headache, is commonly, though often erroneously applied to headache taking its origin in the abdominal organs destined for the support of the individual. The antecedent excesses, the derangement of the appetite, the furred tongue, and altered alvine and urinary secretions, generally suffice to determine cases of recent dyspeptic headache in the child and in the adult; and an emetic or a purge commonly at once rectifies the abnormal condition. Such cases may be regarded as partaking of the congestive type, both from the throbbing character of the pain, the flushing, and the immediate physical influence exerted by the overloaded and distended gastro-intestinal to act upon the circulating organs. Headaches, connected with derangements of the chylopoietic viscera of longer standing, and involving deeper-seated lesions of the organic power, are not so easily combated, and require some discrimination.

There is a form which is more particularly connected with the state of the portal circulation, occurring in subjects leading a sedentary life, though not necessarily given to any excesses in diet, or in persons not intemperate, but habituated to the ordinary luxurious living of the higher classes, and especially to the unphysiological custom of heavy, late dinners; or, again, in females after the grand climacteric, where a species of vicarious action is often set up between the hemorrhoidal and menstrual discharge, and the portal system becomes surcharged by these new duties. This form of headache may not inaptly be designated cephalalgia hemorrhoidalis, not that I wish to add to the complexity of the subject by multiplying names, but that in my mind the term is associated with a definite lesion, implying a distinct procedure. The subjects are ordinarily persons of middle age or advanced life, with a sallow, dry complexion, more or less subject to hemor-

rhagic discharges per anum, andoccasional severe attacks of inflammatory hemorrhoidal swellings. A peculiar irritability of temper is often characteristic of such individuals. The headache is sudden, violent and vertigonous; they see muscæ volitantes or strange figures; a black veil is occasionally drawn over their eyes, and the threatened loss of sight excites the greatest alarm. There is no vascular excitement, the tongue may exhibit some gastric derangement, but is often perfectly clean; there is a general sense of lassitude and disinclination to mental or bodily labour, with an indiscribable sensation of restlessness and discomfort. Such cases are not benefitted by active treatment, in the shape of powerful counter-irritation or purging. Geutle warm laxatives, followed by the employment of quinine and accompanied by a suitable diet and regimen, ordinarily suffice to restore the balance of the circulation and to relieve the head. Mild mercurials may be indicated where the liver is manifestiy deranged, but they should not be given without satisfactory evidence to that effect, as they too often increase the prostration, and thus render a protracted course of tonics necessary. Where an habitual hemorrhoidal discharge has been arrested, I have obtained marked benefit from the application of from two to four leeches to the verge of the anus, while I am inclined to regard a combination of flores sulphuris and magnesia, with the occasional addition of a portion of rhubarb and some aromatic, as almost a specific in this species of portal derangement. The flowers of sulphur operate mildly on the bowels, and they relieve instead of increasing the tenesmus, which in hemorrhoidal subjects is a source of much suffering. The following is a formula, such as I frequently employ:—

℞. Flor. sulphuris, magn. carbon., āā. ℥iiiss.; pulv. rhei. ℥j.; ol. cinnam. ♏viii.

Misce, s. cochleare minimum horâ somni ex lacte sumendum.

Taraxacum is likewise a valuable cholagogue applicable to these cases, but in almost all the cure will be promoted and rendered more or less permanent by the exhibition of bitters, and especially of small doses of quina.

Both sexes are liable to the hemorrhoidal form of headache, but the female sex are necessarily alone liable to that form which arises from the excessive tax laid upon the organs of nutrition in undue lactation. This is accompanied by vascular and nervous symptoms of great prostration, manifested by palpitation, dyspnœa, formication, a sense of treading upon nuts, and such like evidence of hyperæsthesia. Moderation in nursing, especially separation of the mother from the infant at night, tonic diet and regimen, change of air, and the exhibition of steel, gentian, or bark, may enable the mother to continue lactation, if circumstances, and particularly the age of the child, may render this desirable; but in many instances no advantages are to be obtained by any procedure short of weaning. There are other cases in which the whole system of nutrition is so utterly deranged, by previous severe illness or excessive medication, that without any apparent local dis-

order in the chylopoietic viscera, and without any symptoms indicating organic mischief in the brain, we are utterly baffled in our attempts to relieve the sufferer from the constant and harassing headache complained of. A young woman, aged 19, has long been, and still continues under my care, who, up to the age of seven years was, according to the statement of the mother, a robust, hearty child. At that time she had typhus fever, during which she was salivated. She has recovered from the effects of this treatment, and she has now long been subject to pain at the vertex, manifestly of the most distressing character, and for which I regret to say, I have entirely failed in discovering the remedy.

Lead poisoning, which produces such marked derangements in the nervous system, does not appear often to induce cephalic pains; the neuralgic affections resulting from this cause present a more superficial character. There are other poisons which give rise to cephalalgia, among which I would more particularly advert to the poison of urea circulating in the blood from degeneration of the kidneys. I dare not, however, important and interesting as the subject is, do more than allude to it, if it be not to urge the necessity, in obscure cases, as they sometimes occur, to pay especial attention to the state of urinary organs. Not long since, the *post-mortem* of a man was held in St. Mary's Hospital, who had been an out-patient under my care and that of Dr. Markham, for epilepsy and intense cephalalgia, which I regarded from the antecedents, as a rheumatic affection of the dura mater. He was, as my friend and colleague can testify, much relieved by counter-irritation, calomel, and purging. Dr. Markham, under whose care he subsequently came, found that there was so intimate a relation between the cessation of the mercurial action and the disease, that, on a relapse taking place, he resumed the previous plan of treatment. He then became an in-patient, on account of the appearance of an enormous carbuncle, to which his death was attributed. The only lesions discovered adequate to account for the symptoms, though not for the apparent success of treatment, were some congestion of the superficial meningeal vessels, a marked development of the pacchionian bodies, which had actually perforated the dura mater; and extreme atrophy of the kidneys, rendering them totally unfit to perform their functions.

There are forms of headache which, while manifestly originating in the gastro-intestinal tract, seem to be rather the result of reflex irritation than of any influence upon the vascular current. Such are cases in which the only palpable lesion is discoverable, the presence of worms. Ascarides may act in this way; and tenia also gives rise to cephalalgia; The indication here naturally is to remove the parasites; when the reflex irritation of the brain, will, if owing to that cause, necessarily at once disappear.

The third class of headaches, that mainly connected with derangement of the sexual apparatus, now claims our attention.

The patients whose cases belong to this category are mainly if not

exclusively females. We find epileptiform seizures occurring in youths at the period of puberty, and apparently connected with an irregular development, or an abuse of the sexual organs; but, though that fact may justify the assumption, that cephalalgia may in them, at times, originate in the same cause, experience does not frequently bring instances to our notice. My memory does not recal one of the kind. The controlling influence which the sexual apparatus exerts upon the mind and the body of the female is so universal, that we are more prone to exaggerate than to underrate its power; and though an undoubted connection is traceable in a majority of cases between derangement in the ovarian and uterine functions and the occurrence of headache, we must be cautious to avoid the error of overlooking many other conditions which affect the two sexes almost equally. The danger of overestimating this one item in the causation of morbid conditions in the female re-acts injuriously upon the medical man, as well as upon his patient; in the former it may induce a disregard to a more enlarged view of pathological relations, and it will cause him to concentrate his therapeutic proceedings upon one part of the system alone; in the latter, the very tendency to regard all her maladies, as springing from one source alone, may induce a pseudo-morbid or morbid condition, which otherwise might not have occurred.

The subdivisions of the *causa proxima* of headache, to which I have more than once alluded, apply in the present instance with as much force as in other species of cephalalgia. It may present a congestive or an anemic type, or the blood may materially deviate from its normal constitution. It will not therefore suffice, when we have to deal with a case of cephalalgia to determine, for instance, that it is concomitant with amenorrhœa; but to render the diagnosis complete, and the consequent treatment satisfactory, the cause and character of the menstrual arrest must be ascertained. Moreover, there are cases in which the two disturbances appear to co-exist without a definite relation of cause and effect; and where the empirical adoption of remedies requisite to restore the healthy functions of the reproductive system may be imperatively counter-indicated by the deeper-seated and more dangerous malady that has fastened on the brain.

Some data by which to estimate the relation existing between disorder of the sexual system and the occurrence of cephalalgia are contained in the following numbers :—I have examined the records of 172 cases of disease occurring in females, chiefly in the prime of life, who have been under my care during the years 1850—1853, at the female Invalid Asylum, at Stoke Newington, the patients being mainly servants, or persons in easy circumstances. In 46 I find that there was either disordered menstruation or some other manifest lesion of the sexual organs, or cephalalgia. They may be arranged as follows :—

There was evidence of uterine or ovarian disturbance in 39; in 7 there was no such evidence. The number of cases in which cephalalgia is spoken of as a prominent symptom is 26; while in 20 no mention is

made of this symptom. Among the 39 cases of disordered function, 16 were cases of amenorrhœa of greater or less duration. Of these 16, 9 were accompanied by headache; in 7 no mention is made of headache. I am quite aware that the numbers are not sufficient to establish a law, but they serve in a definite manner to corroborate my general impressions as the relation between the sexual system and the painful symptoms to which I have ventured thus cursorily to solicit your attention. Much yet remains to be said, both in regard to diagnosis and to treatment, not only of the third class but of the previous ones alone. The more we direct our attention to a subject, the more we become conscious of the difficulties that surround it, and of numerous points of view under which it may be regarded. I feel that I have already trespassed too far on your kind forbearance, and while I should be happy to receive your encouragement at some future meeting again to treat of individual parts of this and allied subjects, I entreat that you will not criticise my present performance as one claiming the merit of completeness; or in fact any merit but the one which I should indeed be sorry not to be conscious of possessing in common with all members of this Society, earnestness of purpose and candour.—*Med. Times and Gazette, Aug.* 12 *and* 26, 1854, *pp.* 156, 208.

144.—ON THE REMEDIAL AND ANÆSTHETIC USES OF INTENSE COLD.

By Dr. James Arnott, London.

[The following paper on this subject is one of the best we have seen, and shows the various cases to which this remedy is applicable.]

As no remedy has been longer in use, and few are more valued than the local application of moderate degrees of cold, or a temperature ranging from that of dissolving ice to about 70° of Fahrenheit, it may at first appear singular that a greater or more powerful remedial effect should not have been sought by increasing the dose of the agent, or employing a lower temperature, in the same manner as we have sought and found much greater remedial benefit in many cases by using mercury, antimony, quinine, and other drugs, in larger doses than had been customary. The reason is that medical men were under a most erroneous impression respecting the effects of very low temperatures on the body. Because a temperature of zero stops the circulation, and because the vitality of a part has been lost by its *long-continued* congelation, whether caused by exposure to severe cold in winter, or by the incautious use of ice in hernia and other diseases, it was hastily and erroneously inferred that there was danger of loss of vitality from *short-continued* congelation. The mistake would not be greater to infer from the fact, because a long-continued stoppage of the circulation through a limb from an improper application of a

bandage has occasioned gangrene, that it would be dangerous to use the tourniquet in operations.

The correction of this error will be deemed of no little importance when it is considered that in short-continued congelation, judiciously applied, we have an unfailing means of immediately arresting inflammation wherever it can be reached by the remedy; of not only giving speedy relief from pain in many diseases, but in consequence of the organic changes produced by it, of obviating the return of pain; and in malignant disease, of producing an amount of benefit much exceeding that yet accomplished by other means. Although much inferior in importance to these results, it is yet another great benefit conferred by intense cold, that the pain which would be otherwise caused by the greater number of surgical operations can be prevented by it with perfect safety; and not only can pain be prevented, but the inflammation proceeding from the surgeon's knife, that so often proves fatal, may also be obviated by the same means, and with almost equal certainty. It will be proper to consider the remedial and anæsthetic effects of intense cold separately; but before doing so, it is necessary to mention how this degree of cold is produced and applied, as well as to attempt an explanation of its mode of operation.

That degree of cold may be called intense which immediately benumbs the part to which it is applied, speedily stops the circulation through it, and congeals the adipose matter. I have usually produced these effects by placing what are termed frigorific mixtures, either immediately in contact with the skin or mucous membrane, by means of a net of thin gauze containing them, or by allowing them to act through thin bladders, or metallic vessels of appropriate form; but there are various other ways of effecting the same object, some of which are preferable for certain purposes. Substances passing rapidly from the solid to the fluid, or from the fluid to the aeriform state, strongly abstract caloric from other bodies in contact with them; and substances, either solid, fluid, or aeriform, already sufficiently cooled by artificial means, may be placed in contact with the part; the first, as solid metallic balls of appropriate shape; the latter two, when forming strong currents. When cold is produced by the common frigorific mixture of ice and salt, and applied by means of a gauze bag or net, the following is a convenient mode of proceeding:—If the congelation is not to be extensive or long-continued, a piece of ice of the size of a large orange will be sufficient. This is well pounded in a coarse cloth or bag, and the powder being placed on a large sheet of paper, is thoroughly mixed, by means of a paper-folder, with about half its weight of common salt. The mixture is then put into a net of about four inches diameter, and as soon as it begins to dissolve, it is ready to be applied. The net is not kept motionless on the part, but is frequently raised in order that fresh particles of the mixture may be brought into contact with the skin; and the water that escapes from it may be absorbed by a sponge, or allowed to fall into a basin

placed underneath. If the surface to be acted upon is of small extent, a very thin and large copper spoon containing the mixture, or a solid brass ball of about a pound weight, which has been immersed in ice and salt, will often answer, and be a neater mode than the net.

The moment a gauze net, or a thin metallic vessel containing ice and salt, is applied to the skin, it is benumbed. There is hardly a sensation of cold produced, and no tingling or smarting. If the contact of the frigorific be continued a few seconds longer, the surface becomes suddenly white, in consequence, doubtless, of the arrest of the circulation; and this change of colour is attended with a slight smarting like that produced by mustard. There is now complete anæsthesia, which, if the frigorific were removed, would remain complete for several minutes. But if the frigorific be allowed to act, another change is produced—the adipose matter under the skin is congealed, and the part becomes hard as well as white. The depth to which the benumbing influence of cold will extend depends upon a variety of circumstances, as the degree of cold, the duration of the application, the vascularity of the part, whether pressure is used or the circulation is suspended, &c., &c. After the usual application of cold for anæsthesia, the circulation soon returns to the part, and the skin assumes a red colour which lasts for several hours. If the congelation has been considerable, there is now some smarting felt, unless the natural heat be more gradually restored by pouring cold water on the part, or by placing on it a little pounded ice, or a bladder containing iced water. If the application has not exceeded the first stages, there is no smarting, and no necessity, therefore, for such precautions.

The redness produced does not, as might at first sight be supposed, indicate an inflammatory condition, but the very reverse. The tonicity of the small arteries appears to be lessened or suspended for a time, and instead of being inflamed, the part is rendered unsusceptible of inflammation. Parts cut after congelation heal by adhesion or the first intention more quickly than they otherwise would; and, as has already been said, we possess in this expedient a certain and prompt remedy for every inflammation accessible to its complete influence.

1. *Remedial Uses of Intense Cold.*—The remedial qualities of intense cold may be described as antiphlogistic, anodyne or sedative, and specific; and it is useful in the diseases for which other remedies possessing these qualities have been employed, viz., in inflammatory, painful or irritative, and malignant diseases. The circumstance which limits its application in these, is the impossibility of extending its influence beyond a certain extent or depth, although it is certain, from its effects in a deep seated disease, that this influence, whether it be direct or sympathetic, is more extensive than would at first be supposed. It may be laid down as a rule, that in every case in which the local application of moderate degrees of cold has been found of service, the use of well-regulated congelation would prove much more

useful; and in those diseases of similar character, in which moderate cold has not been employed from the idea that their seat was beyond its reach, congelation might be tried with reasonable hope of success. Intense cold has this immense advantage over other powerful remedies of the same class, that it may be used with impunity—if it does no good it will do no harm. Who will venture to affirm this of bleeding, mercury, antimony, opium, chloroform, arsenic? Neither in my own practice, nor (so far as I can learn) in the practice of others, has there been any untoward result from the use of congelation. Its action being confined to the diseased part, and not uselessly expended on the rest of the system, affords the explanation. Other topical remedies have much the same character for safety, but what other expedient of this class has a tenth part of the power of intense cold?

Instead of enumerating the diseases in which this agent has been employed according to the above classification, I shall mention, first, those in which it has been more or less successful; and, secondly, those in which it might, reasoning from analogy, be tried with hope of advantage. In administering intense cold as a remedy, the common or a more powerful frigorific has been generally applied directly to the part, or with the intervention only of the thin gauze containing it; and the duration of the congelation has been from one to ten minutes.

In the spring of the year 1849, I requested the house-surgeon of the Brighton dispensary to apprize me of every case of acute lumbago that came under his notice, and, in all of these, amounting to nine, I employed congelation with perfect and permanent success. The net containing the ice and salt was passed to and fro for five minutes, over a surface of about eight by four inches, the skin being blanched during the whole of this period. In only two or three cases was it necessary to apply the remedy twice. Several of the patients rose immediately afterwards from their beds to which they had long been confined. In most cases of chronic rheumatism, the remedy has been equally successful; and this, on account of the frequency of the disease, is one of its most valuable applications. Sciatica has generally yielded to it, but by no means so easily. In acute rheumatism, the local inflammation of the joints is, by this means, invariably and completely relieved, and that portion of the accompanying fever thence arising, is consequently removed. The disease, thus treated, will run a painless course of about a week's duration. In no case, of about a dozen, in which congelation was almost exclusively employed, was there extension of inflammation to the heart; and I am persuaded that the best plan of preventing this, is to subdue the inflammation of the joints from which it generally originates. I did not use the remedy in cases where the heart was already affected, though I have since learned that congelation is employed in the hospital at Vienna (where it was introduced some years ago by Dr. Waters of Chester), as an application to the chest in rheumatic carditis. That this affection of the heart would occasionally occur during the treatment of acute rheumatism by con-

gelation is very probable, because it often arises, as the same affection of the joint does, from a morbid condition of the blood over which the remedy can have no control; and that such an occurrence, in the present feeling on the subject, would be called metastasis from cold, is very certain; but I am convinced that it will yet be acknowledged, though probably after many years, that this affection would be much decreased in frequency by the adoption of any means capable of quickly subduing the accompanying arthritis. When it is considered what an immense amount of eventual mischief arises from the organic disease of the heart that occurs under the common modes of treating rheumatic fever, to say nothing of the patient's present sufferings and tedious confinement, it is to be lamented that prejudice should oppose any measure of greater promise. In rheumatic gout, the relief has been as marked from congelation as in lumbago. In ordinary inflammation of the joints it has also been exceedingly useful. Ophthalmia has been immediately cured by keeping the frigorific in contact with the gently closed eyelid for three or four minutes. Glandular inflammation in the neck and groin, yield to a high degree of cold with equal facility. I have been told that in orchitis, its beneficial operation is immediate; and I have little doubt that, from its closeness to the surface, the urethral inflammation causing orchitis, would be quickly suppressed. Congelation has often at once converted an irritable into a healing ulcer, though sometimes the patient has complained of the pain of the operation; it is probable that had the salt in the mixture been prevented coming in contact with the irritable surface, this would have been in a great degree prevented. Certain acute inflammatory affections of the skin are equally under its influence, as erysipelas, eczema, impetigo. It has not often failed in prurigo, but in only one case of psoriasis has it appeared to be of service. Painful nodes are at once relieved by this means, and the inflammation subdued. I have only used congelation in carbuncle as an anæsthetic previously to cutting it, but it is probable (judging from its effect in severe boils) that the incision might have been dispensed with. It has been mentioned to me that severe cold has been employed with the same view in whitlow, of which it is certainly a sufficient cure. The inflammation following sprains, contusions, and other similar injuries, is perfectly under its influence; and the same may be said of burns. In one of my publications on the subject, I have related the excellent and speedy effect of congelation in a case of meningitis, and also in a case of peritonitis; I have not had the opportunity of trying it in other affections of this description. Headache of various kinds has at once yielded to the application, for a minute, of a frigorific over the painful part; and in neuraliga affecting the side, it has generally proved efficacious. In neuralgia attacking the face and other parts, it has often succeeded and often failed. If the seat of the disease be deep in the brain, little can be hoped from this remedy, although there are few obstinate cases of neuralgia in which it does not deserve a trial. Tooth-

ache is generally at once relieved by it if properly applied; and there is no remedy for the painful affection of the mouth caused by mercury comparable to congelation. A spoonful of dissolving ice and salt is repeatedly put into the mouth, until it becomes benumbed. In one case of severe scurvy of the gums, where I feared a loss of the teeth, extensive congelation of the gums immediately arrested the disease.

In many of the diseases just enumerated, the promptness of the cure is as remarkable as its certainty. In military and hospital practice this advantage is very prominent.

In cancer the effects of congelation have been various. From my own experience, and that of others, I think that in its early stages, and when from its size the tumour can be thoroughly brought under the influence of the remedy, it will be cured by it. In all stages the progress of cancer will be arrested or retarded, and the pain accompanying it assuaged. The difficulty in advanced cases is to cause a sufficient degree of cold to pervade the tumour. The French translator of a recent paper of mine on the subject ('L'Union Medicale' for May), thinks that the frequent occurrence of cysts in cancerous tumours may facilitate this. But if layer after layer is acted upon, it may be enough. In cancer of the womb the frigorific is applied by means of a speculum, and one stronger than ice and common salt will generally be required. The opinions of Dr. Hughes Bennett respecting the nature of cancer have much influenced the mode in which I have used congelation in its treatment. M. Velpeau states in his recent elaborate work on diseases of the breast, that he has employed *long-continued* congelation as a substitute for caustic in cancer; but of this effect of the agent I have no knowledge.

There are other diseases in the treatment of which severe cold would probably be very useful. It might be applied with such a hope to the spine in tetanus, or to the scalp in certain varieties of mania. After gunshot, and other severe wounds it would prove a powerful preventive and cure of inflammation. Even in pleuritis, and other deep-seated inflammation of the chest, as well as in various uterine affections, benefit might rationally be expected from it. In two cases of epidemic cholera, I administered a succession of draughts of a temperature of about 25° Fahr., with apparently excellent effect; and I cannot doubt that the application of cold to the interior of the stomach which, as appears by the recently published report of the College of Physicians, is the only treatment of cholera which has been unanimously approved of, has not been carried far enough. If the irritation of the mucous membrane be considerable (as it must be to account for the exhausting and fatal discharges), the temperature of ice merely, is not sufficient to subdue it.—*Monthly Journal of Medical Science, July* 1854, *p.* 33.

145.—TREATMENT OF CANCER BY CONGELATION.

By Dr. James Arnott, London.

[Some years ago Dr. Arnott directed our attention to this subject, so that it is by no means a novelty; indeed Dr. Arnott himself confessed that he has only been a means of bringing this remedy into more general notice.]

Having ascertained the important facts that the circulation of blood in a morbid part may be temporarily suspended by intense cold, without in the slightest degree endangering the vitality of the part, and that such a suspension, and other concomitant effects of this degree of cold, are highly curative in inflammatory and neuralgic affections, I merely applied it in cancer to arrest the inflammation accompanying the disease, on which the rapidity of its progress, and many of the most distressing consequences, depend, and at the same time to assuage the pain by its permanently benumbing or narcotic property. I at first expected only to find a substitute for the very inefficient and otherwise objectionable remedies of inflammation and pain in common use in cancer; and had congelation only fulfilled these indications, it would have been very valuable; but experience has shown that it has still more powerful effects in this disease, although, from the unknown nature of cancer, it is as difficult to account for these as it is to explain how the exhibition of bark or quinine cures an ague. Professor Bennett, of Edinburgh, expresses (in his able work on Cancer) the opinion, that "were it possible to bring down the temperature of an entire cancerous growth below the vegetating point, we must inevitably kill it;" and it is not improbable that to such destruction of the vitality of the cancer-cells—to the killing of these parasitic animalcules—the curative influence of congelation may be chiefly due. But however satisfactory it might be to ascertain the mode of operation of the remedy—whether it acts in this manner, or by some unknown change produced in the functions of the vessels or nerves of the part, in addition to its obvious power of suppressing inflammation and assuaging pain—the chief point is to know whether it has great control over cancer, and this can be ascertained only by experience.

[Insensibility to pain cannot be expected to be caused by Dr. Arnott's frigorific mixture beyond a certain depth of texture; but it is supposed the effects of the cold will extend much deeper. *Short* congelation may be quite sufficient, in many cases, to destroy the vitality of diseased parts without endangering the life of contiguous structures. Dr. Arnott brings forward the following case of scirrhous cancer of the breast to illustrate his practice. There seems to be no doubt that it was a case of cancer. Mr. Lawrence himself had so called it.]

On examining the breast, I found a hard, flattened hemispherical swelling, of about three inches diameter, knotted on its surface, con-

tiguous with, but not adhering to the skin, excepting at the nipple, which was retracted and slightly ulcerated. There was at times a lancinating pain. The disease had existed more than two years, and although the usual routine had been had recourse to, no kind of treatment had appeared to be of any service. The disease gradually but steadily progressed.

The frigorific mixture of ice and salt was applied for about four minutes, the usual precautions being taken to prevent the smarting that would otherwise take place on the return of sensibility to the parts which had been congealed. A similar application was repeated about every month by her medical attendant in the country; and after about six such applications I again received a visit. The tumour appeared to be smaller than when I first saw it, the decrease being chiefly in its thickness; and in other respects there was great improvement. She continued the same plan of treatment, and the principal results are recorded in the following extracts from a letter which I have lately received from her, dated April 6th :—

The substance of this letter is, that the tumour continues of nearly the same dimensions; though it appears to be a little longer, it is less thick. She has not "for the last four months, known what a bad night is, being always free from pain;" though during the day there is, "at times, three or four, or perhaps more, transient pains, while, at other times, she passes some days without any pain." Her "general health is very good, and is kept good by regular exercise in the open air." As I had expressed the opinion that she should make longer intervals between the applications than a month, in order to ascertain whether the tumour was not now merely a lifeless mass, like a bullet in the flesh, which might give occasional uneasiness, particularly when the mind was intent on the subject, she states in reply—"Five weeks have intervened between the last applications; I have these renewed, because, while I feel there is life in the tumour, I think they are necessary." She concludes a letter written a month previously (March 4th) by the expression of a wish "that every sufferer from the same disease were as happily delivered from the effects of cancer as she has been by this remedy."

As in almost every case which I have treated by congelation, a certain degree of hardness and swelling remained after the disappearance of other symptoms, it is important to investigate the cause of this. On the supposition that cancer is essentially a congeries of living cells, we may reasonably think that the absorption of these, after their vitality has been destroyed, must be slow, if it take place at all; and perhaps the irritation that has induced patients to apply for the frigorific application afresh, may have proceeded from the presence of this inert mass of dead cancer-cells. I should be sorry, however, to think that the absorption of these never takes place, because in a voluminous congeries of cells it were difficult to understand how the cold could reach the inner surface of the mass without the absorption of the more

superficial layers having previously taken place after the extinction of the life of the cells constituting them; unless, indeed, the layers of dead cells were to form so good a conductor as scarcely to resist its passage. But in their living state, the tumour in which they are interspersed is so dense and so little intermixed with bloodvessels, as to form a substance easily permeable by cold—as easily, perhaps, as cystic tumours are, the fluid contents of which I have congealed in applying cold to them, as an anæsthetic, previous to their excision.

If it be objected to the cases which I have now related that they do not furnish satisfactory evidence that cancer is completely curable by cold, they show, at least, that it will produce much more benefit in this disease than any other remedy. If an unequivocal cancerous tumour subjected to this treatment, instead of increasing in size, gradually decreases, while the patient becomes free from pain, (excepting such uneasiness as a mass of dead cancer-cells might excite,) and the general health improves,—if no glandular enlargement takes place in the armpit, or extension of the disease to any other part appears, and if this condition continues without change for a long period, it is surely a very satisfactory change in the patient's condition. I question much if it be possible entirely to remove the hardness in the majority of such cases, but this hardness is no proof of the presence of malignant affection, and no source of inconvenience to the patient. What other remedy yet employed in cancer will effect as much? Too many of the measures employed as remedies only precipitate the unfortunate patient's fate.

Before concluding this paper, I must advert to a statement which appeared some time ago in a medical journal, that a patient had been seriously injured by a prolonged application of ice to her cancerous breast of upwards of twenty-four hours. As every one has not yet learned the essential difference between the application of ice and congelation in disease, it may be advisable now briefly to point it out; and as the subduing of the inflammation usually accompanying cancer is one of the objects in using either of these methods of treatment, it may simplify the matter to speak of this difference as respects their use in preventing or removing the inflammation after wounds or other mechanical injuries. Ice, or a temperature of 32° Fahr., acts as minor degrees of cold do, in lessening the increased vascular action which accompanies (if it does not constitute the chief element of) the morbid condition called inflammation; but congelation, by causing a temporary suspension of the circulation and sensibility of a part, does this and a great deal more. It effects such a change in the vital actions of the part, perhaps by removing for a time the tonicity of the small arteries, as not only immediately to arrest inflammation, but to render the part unsusceptible of this condition for some time afterwards. If this suspension of vitality be of short duration, there is not the least hazard of the part being permanently injured, and when congelation is purposely effected by a powerful frigorific, its duration and extent

can be exactly limited. But if it should happen that owing to a debilitated state of the body, or other circumstances, a prolonged application of ice should at length congeal the part, as the surgeon may not be aware of this unintended effect until after it has lasted for a long time, (as has happened in applying ice to gun-shot wounds and in strangulated hernia,) much injury may be the consequence. Fortunately, the aching usually caused by a continued application of ice is a preventive of such mischief, and another reason why it has been so little employed in surgery.—*Lancet, April* 15 *and May* 6, 1854, *pp.* 415 *and* 489.

146.—*Cold as an Anæsthetic.*—[This agent has been lately tried in several cases in St. Bartholomew's, to prevent the pain in the incisions through the skin, which are often, indeed, the most painful part of the operation. In one case, in private practice,]

Mr. Paget excised a fatty tumour from over the shoulder of a lady, the skin having previously been frozen ; and although the incision required was four inches long, yet no pain was complained of. In proof that congelation does not hinder the subsequent healing, it may be mentioned, that in that instance a considerable part of the wound united by the first intention, and the rest of it soon closed. The mixture used was about equal parts of pounded ice and salt, enclosed in a coarse muslin bag. This was by degrees applied to the surface to be operated on, and, as the patient got used to the sensation, allowed to remain on it. The process occupied from four to six minutes, and caused no pain. Operators who make use of this plan, must recollect that the skin does not cut so crisp as natural when frozen, but like a tough soap, requiring a little modification in the handling of the scalpel. The apparatus recommended by Dr. Arnott, a gauze bag, a large brass ball, a spoon, &c., is now kept by the instrument-makers; but it is very simple, and may easily be extemporized without cost. It is much to be desired, that the extent of practical use which may be made of cold as a local anæsthetic should at once be tested, since should it prove to be generally applicable, it would prevent, on a large, scale, the risks incident to the inhalation of chloroform. In a very great majority of the cases for which the latter agent is now used, the cutting of the skin is almost the only painful part of the operation.—*Med. Times and Gazette, July* 1, 1854, *p.* 11.

[The following case, by Nathaniel Ward, Esq., illustrates the value of Dr. Arnott's views on the effect of this anæsthetic agent:]

I was consulted a few days back by a gentleman between 30 and 40 years of age, of a highly nervous temperament, concerning a tumour situated over the right clavicle, and which required removal. It was just one of those cases in which a surgeon, on the one hand, would not have sanctioned the use of chloroform, and on the other,

in which the patient would have protested against anything being done unless it could be accomplished without pain. The tumour was of a sebaceous character, as large as a walnut, had been gradually increasing for two or three years, and gave him inconvenience during every movement of the arm. On informing my patient that chloroform (to which he was much averse) would be attended with risk, but that the removal of the tumour could be effected with safety and without pain by the previous application of cold, his nervous anxiety subsided, and he consented to the operation.

I mixed together two parts of pounded Wenham-lake ice and one part of salt, and put them in a common white pocket-handkerchief, and kept the mixture pressed on and around the tumour during the space of one minute by the watch. The integument that was submitted directly to the action of the cold became remarkably corrugated. It was then cut into, and the tumour removed without the slightest sensation of pain, and much to the astonishment and delight of the patient, who said that the only thing that annoyed him, and that not much, was the burning sensation of the application. No vessel required ligature, the bleeding, in fact, being very trivial, and the wound had healed at the end of the week.—*Med. Times and Gazette Sept.* 2, 1854, *p.* 248.

[It appears that cold does not always answer the expectation. Two cases of failure are recorded below. The first case was under the care of Mr. Walton, at St. Mary's Hospital.]

The tumour was subcutaneous, and felt quite as loose as such tumours generally are; it had a size of about an adult fist, somewhat flattened. Nearly an hour was wasted in unsuccessful attempts to freeze the skin, but as this was due, of course, to mistakes in manipulation, it should not be charged against the process. At length, a mixture, properly made, was applied, and in about four minutes the requisite area of skin was frozen, as white and hard as could be wished. Without the loss of a moment's time, Mr. Walton made a deep incision through the whole required extent of skin into the tumour. This gave no pain. The tumour was seized at once, and forcible enucleation attempted. It could not, however, be extracted so easily as had been expected, and adhesions, both to the skin and to the deeper parts, required to be divided by the knife. At one part, where it appeared to have been pressed upon by the edge of the woman's stays, the adhesions between the tumour and skin were very close, and a careful division was needed. The operation lasted perhaps altogether about four minutes, and during the whole of that time, excepting the first cut in the skin, the patient was making loud cries and protestations of pain. It should be stated, that she was a remarkably quiet person, and one who did not complain for little.

The above operation took place on Wednesday last; and on the Friday following we witnessed an almost similar one in the theatre of the

London Hospital. Mr. Critchett's patient was a man of middle age, and the tumour was a fatty one, about the size of a large fist, and situated beneath the skin in the upper part of the front of the thigh. The freezing of the skin was very complete, nearly five minutes had been occupied in the process, and the incision into it appeared to be quite painless. The tumour had, however, rather intimate adhesions, especially to the integuments; and the man complained much of almost every touch of the knife excepting the first.

We had witnessed before the above several cases of partial failure in the case of cold, but were inclined to attribute them somewhat to timoressness in its use; in these, however, it was fairly and sufficiently used. Their evidence seems clear to the effect, that, unless the tumour be so loose, and almost instantaneous enucleation can be performed, a painless operation must not be expected. The anæsthesia does not extend at all deeper than the skin; and even in it recovery of sensibility is so rapid during the manipulations, that the division of adhesions to its under surface will not be painless unless made without a minute's delay. There are, doubtless, a large number of cases in which, despite these drawbacks, anæsthesia by cold may be made very useful; but the surgeon must always be careful not to promise to his patient a painless operation. . As it regards the excision of tumours, it will probably, in a few instances, be completely successful, and in many others sufficiently so to afford a good pretext for avoiding the use of chloroform. It is, perhaps, adapted best of all for use in the very painful operations which it is so frequently necessary to perform on the fingers and toes. Here it can be applied from several sides at once, and a more complete and less transitory degree of anæsthesia produced.—*Med. Times and Gazette, Sept.* 30, 1854, *p.* 342.

[Dr. Arnott justly remarks that it has never been asserted that the effects of cold could extend very deeply; but that as the division of the skin is one very painful part of every operation, this pain may be saved in almost all cases, and in some operations this is all that is required.]—*Med. Times and Gazette, Oct.* 7, 1854, *p.* 379.

147.—*Local Anæsthesia by means of Dr. Hardy's Instrument.*—M. Nelaton employed this instrument at the Clinique, upon a girl who was suffering from abscess in the axilla, and from a small wound upon the back of the wrist, both extremely painful. The first application of the chloroform vapour on the tumour in the axilla produced an insensibility which lasted three hours, during which time the part could be handled and examined with impunity. After the second application, the abscess was opened; the patient declared she was not conscious of any pain from the operation, and became aware of the fact that it was over only by touching the part with her hand. From this time she had no more pain. The little wound on the wrist fumi-

gated in the same manner, remained quite insensible.—*Gaz. des Hopitaux.—Dublin Hospital Gazette, April* 1, 1854, *p.* 80.

148.—ON THE PATHOLOGY AND TREATMENT OF CHOLERA.

By Dr. J. Rose Cormack.

[One of the most excellent papers on this subject is by Dr. Cormack, Editor of the 'Association Medical Journal,' from which we extract the following.]

1. Cholera is a fever, intimately related to those fevers which depend on malaria.
2. The intermittent or remittent type can be generally recognized in the milder, and also not unfrequently (though less distinctly) in the severer cases.
3. The stage of collapse ought to be considered as an aggravated cold stage of the paroxysm of a pernicious fever, which may spontaneously terminate in death or reaction.
4. The least dense portion of the blood has an excessive tendency to exude through the capillaries of the stomach and bowels, and pass from the body by vomit and stool.
5. The inspissated residual blood being unable to pass through the small pulmonary vessels, causes congestion of the lungs; and as speedy consequences of this condition, paralysis of the right side of the heart from over-distension, asphyxia, and other subordinate derangements of the vital actions.
6. Death may take place from
   - *a.* Asphyxia.
   - *b.* Necræmia, *with* loss of the least dense portion of the blood by stool and vomit.
   - *c.* Necræmia *without* such loss of the least dense portion of blood as can be discovered during life—the exudation remaining within the stomach and intestines.
   - *d.* Toxæmia from absence or deficiency of sanguineous depuration.
   - *e.* Inflammation of lungs or other organs supervening in convalescence.
   - *f.* Debility.
   - *g.* Gastro-enteritis.
   - *h.* Two or more of the above causes combined.
7. The anatomical lesions found on dissection vary with the causes of, and circumstances attending, death.

Treatment of Cholera.—The advocacy, by many, of a uniform and empirical system of treatment of cholera, has greatly tended to obstruct the progress of rational inquiry. Several plans, and particular

remedies have been found useful; and practitioners, impressed by the published account of this success, have too often contented themselves with empirically repeating the instructions of others, without carefully analysing the facts and seeking for a rational explanation of the *modus operandi* of the therapeutical agents which they employ. The stage of the disease has not been sufficiently noted in relation to the therapeutic means employed; and recoveries have been too largely designated cures. With one, capsicum has been the specific; with another, camphor; with another, sulphuric acid; with another, acetate of lead; with another, quinine; and so on might the list be indefinitely extended. Now, that all of these and other medicines are *par excellence* cholera remedies, I perfectly believe; and it seems to me that a more successful treatment is to be discovered by a judicious application of the means which we possess, than by searching for some new specific.

It seems to be of primary importance to bear in mind that we have a poison-disease to deal with, resembling, if not indeed identical with a pernicious ague: that it has a course to run, which may be modified and curtailed, but which, even when let alone, shews a disposition to terminate in recovery. We have, therefore, in the first stage, in which chills and other premonitory symptoms of discomfort may be present, to adopt measures which may be regarded as prophylactic rather than curative. It is in this stage that the pernitrate, or some other preparation of iron, and the disulphate of quinine, are of signal benefit. Here, however, we must not follow a blind empiricism. We must, if the digestive system is at fault, combine with the use of these special medicines a judicious alterative system; and, should there be any tendency to copious watery evacuations—the serum of the blood—we must be prompt in our administration of those remedies which are generally termed hæmostatics; among which may be particularly mentioned quinine, sulphuric acid, nitrous acid, acetate of lead, creasote, and nitrate of silver. If the case should proceed a little farther, in spite of our endeavours to arrest its progress, or should the case, from its inherent intensity, or from neglect, not present itself for medical treatment till the secondary effects of the loss of serum have become apparent, we may probably find it useless to think of the quinine, and be obliged to treat the cramps and collapse which threaten speedy dissolution. The necessity for diffusible stimulants is now apparent: and, of them all, as a general rule, camphor will be found the most useful. It can be conveniently administered in large doses by dissolving it in chloroform; and the solution combines so well with creasote, that it will often be found prudent to confine our administration of medicine to frequent doses of a mixture of camphor, chloroform, and creasote. The chloroform is useful as affording facilities in dispensing: and it cannot, in the small quantities administered, do any harm. The camphor acts quickly as a diffusible stimulant; and the creasote has a powerful effect in restraining the serous discharge. Indeed, I am inclined to think that its beneficial effects are not much, if at all

inferior in this respect to those of sulphuric and nitrous acids. External warmth, and the use of stimulating embrocations, are very beneficial in conjunction with the internal use of camphor. The suppression of urine is not a symptom which is to be relieved by the administration of diuretics; it is a necessary consequence of the congestive paroxysm of the disease, and its removal is likely to follow the cessation of that paroxysm.

Enormous doses of opium, of calomel, and of other powerful drugs have been given to cholera patients; and there can be no doubt that such substances, when introduced into the system when in a state of collapse, are not likely to produce any very suddenly appalling effects. And indeed, in a vast number of cases, they seem to lie as quietly in the stomach of the cold cholera patient, and to produce as little effect as if they were deposited in a glass bottle. Should the patient, however, emerge from the state of collapse, he runs as great a risk from the poisonous doses of these medicines which have been placed in his interior, as he has just escaped from the pestilence. Large quantities may certainly pass off by the bowels, unacted upon; but it cannot be questioned that in a very great number of cases which have been treated in the way mentioned, patients have had their convalescence abruptly arrested by fatal narcotism or exhausting salivation. The use of opium and calomel, in ordinary doses, is often necessary: but the inordinate doses of these medicines formerly, and perhaps still, employed by some, cannot be too much condemned.

The importance of arresting the serous discharge, and of maintaining the warmth of the body by the application of heat externally, cannot be over-estimated. In fact, the judicious carrying out of these intentions constitutes the essence of the treatment of cholera. Other therapeutic measures may be regarded as liable to considerable variety, according to circumstances, and as valuable and auxiliary, rather than as always indispensable. The prompt arrest of the serous discharge, by creasote, sulphuric acid, nitrate of silver, or other remedy, has undoubtedly saved innumerable lives; and from amid the chaos of contradiction, depreciation, and laudation, in which the merits of special modes of treating cholera are involved, the diligent application of warmth to the surface can be extricated as a measure of established value.

Mr. Barwell, in a litt'e work just published, says: "It is a grand essential to keep up the temperature of the patient, since the tendency to become cold is certainly a great characteristic of this disease. Hot bottles should be placed to the feet, and inside of the thighs; and India-rubber bags filled with hot water to the loins and abdomen. The bed-clothes must be ample, and should be so arranged, by means of an extra blanket wrapped round the shoulders, or passing round the chest and under the arms, that he does not bare that part to the cold in his restless jactitations, nor in rising on the elbow to vomit, as he may perhaps frequently be obliged to do." These recommendations

of Mr. Barwell are sound and practical. They are, moreover, firmly based upon facts which came under his observation in St. Thomas's Hospital. In the following passage, he states very clearly, and, I think, very correctly, the relative value of internal stimulants and external warmth in cholera ; and he also refers to the hospital experience already referred to, upon which his opinions are founded.

"Stimulants," says Mr. Barwell, "such as brandy, ammonia, or wine, though decidedly useful in their place, have not such effect in restoring circulation, and exciting the system to greater action, as in collapse from other disease; indeed, considering the difference of its cause in this and in other maladies, it is not to be expected that they would be as beneficial; for prostration usually occurs in consequence of nervous shock, and consequent loss of nervous power; therefore stimuli which act upon that system are naturally, in those cases, such as would benefit. But in this disease there is comparatively little loss of nervous power; in fact, with so great disturbance of the circulation, the retention of nervous power is marvellous. Our remedies ought not, therefore, to be directed through that system, but we should, if possible, find some means of acting on and recalling the circulation, without exciting the nervous centres ; and the best mode of doing this is by external heat. This principle of combating the deadly cold collapse was not found or recognised at St. Thomas's until after several cases had been treated at the hospital, and the general inefficacy of medicines or of stimulants proved. Though a certain number under the treatment then adopted recovered, still the whole result was unsatisfactory: thus, of twenty-eight cases of perfect collapse, before external heat was used, seven only recovered—a very small proportion : but, after this was employed, sixty-one patients were treated by some mode in which this formed an essential part; and of these, twenty-seven recovered, or not very far from half the whole number."

Did space permit, I could adduce much evidence of the same description, in addition to that which has now been quoted. In fact, I could show that the success which many have ascribed to favourite pharmaceutical nostrums, ought, with much greater probability, if not with absolute certainty, to be ascribed to the external warmth employed along with the drugs.

Having now glanced at the general principles upon which medicines ought to be employed in the treatment of cholera, I would now remark, that I have not enumerated every drug which may be usefully employed, and have selected those with the operation of which I am personally most familiar. This much, however may be added ; that they are good types of the respective classes of remedies to which they belong.

The formulæ to be adopted must of course be varied in accordance with the circumstances of each case ; and it is by a ready power of modifying these formulæ, that the skill of the practitioner is displayed. The formulæ cannot be too simple. No therapeutic advantages flow

from the multiplicity of ingredients; and by administering remedies for the purposes of clinical study, as well as of cure, it is obviously necessary not to give more than one medicine, or one class of medicines at the same time.

The following medicines possess in a high degree the power of arresting the serous diarrhœa, which generally precedes collapse by a good many hours, and which is the immediate cause of that collapse as well as of the cramps:

Creasote;
Turpentine;
Sulphuric acid;
Nitrous acid and nitro-sulphuric acid;
Nitrate of silver;
Quinine;
Gallic acid;
Alum; and
Acetate of lead

1. *Creasote.* Some patients refuse to take creasote, from a dislike to its odour; but if one or two doses of two or three drops can be taken every hour or every two hours, in mucilage, I prefer it to any other means of cure in serous purging. It hardly ever fails.

2. *Turpentine* may be used in place of creasote, in doses of ten minims. I have in several cases of diarrhœa found it quite successful.

3. *Sulphuric Acid.* The use of this acid in diarrhœa is by no means new. The late Dr. Anthony Todd Thompson, in his 'Dispensatory' (Edit. 1837, p. 762), wrote as follows:—"When combined with mucilages, it has been beneficially given in passive diarrhœa, operating on the relaxed nervous coat of the intestine as an astringent. The usual dose is from ten to thirty minims, *but this dose may be very often repeated.*" In later years, its use has been revived; and several writers in the various medical periodicals have spoken in high terms of its efficacy. Among those I may mention Mr. W. I. Cox, of Kensal Town, who has also employed it in cholera, ('Lancet', for August, September, and October, 1849, &c.); Mr. W. Griffith, of Eaton Square, ('Ibid'., Oct. 4th, 1851); Dr. G. B. Payne; Dr. Miller, of Stoke Newington; Mr. Edgar Sheppard of Enfield, ('Provincial Medical and Surgical Journal,' for September 15th, 1852, and 'Association Journal' for March 18th, 1853); and several other practitioners. To Mr. W. I. Cox is due, as far as I am aware, the merit of having first employed sulphuric acid in the treatment of *cholera.* In a tabular view of the result of treatment of ninety cases given by him in the 'Lancet' for January 26th, 1850, five are mentioned as having been treated with sulphuric acid, generally in combination with Dr. Ayre's method. Four of the cases so treated recovered; but we can scarcely draw a conclusion from so small a number.

Dr. Fuller, of St. George's Hospital, in a paper lately published, see *Retrospect*, vol. xxviii, p. 405, speaks in high terms of the efficacy of

sulphuric acid in arresting diarrhœa. In bilious diarrhœa, and in certain chronic diarrhœas, he says it is of little or no avail; but in epidemic diarrhœa, in "acute autumnal diarrhœa," and in more decided choleraic diarrhœa, he has known no single instance of its failure. He gives it in doses of half a drachm mixed with water, every twenty minutes or oftener; and the effects produced are described as remarkable; heat returns to the extremities; the nausea and vomiting cease; the purging is stayed; the cramps subside; perspirations generally break out; the tongue becomes moist and slightly coated; the intestinal evacuations become healthy; and the pulse regains its normal steadiness.

In epidemic cholera, Dr. Fuller has had no experience in the use of this remedy. He would give it in doses of ℥xl. or ʒj. five or six times in an hour, simply mixed with water; and he is opposed to the employment at the same time of brandy or any strong-flavored stimulant or carminative. Calomel, if it is thought necessary, may be given at the same time with, or after the acid. Mustard, bran, or other warm poultices or fomentations may be applied; they usually afford relief. From the prompt action of sulphuric acid in arresting diarrhœa, Dr. Fuller expresses great hopes as to its superiority in cholera over other medicines which require a longer time for their action.

4. *Nitrous Acid and Nitro-Sulphuric Acid.* Mr. W. J. Anderson, in the 'Association Journal' of Nov. 4, 1853, recommends a combination of nitrous acid and sulphuric acid. He says: "Can a remedy be found which will readily yield up its oxygen, and supply that element to the impure blood: and at the same time, by its astringent properties, tend to check the enormous exudation which takes place from the mucous surface of the intestinal canal? In our present state of knowledge, some of the mineral acids appear to be the best adapted to this purpose; and, for certain reasons about to be explained, a combination of nitric with sulphuric acid seems to me to be preferable to any other. The acid should be administered in tolerably full doses, and repeated at intervals varying according to the nature and urgency of the case. For an adult, we may give acidi sulphurici diluti f. ʒij, acidi nitrici diluti f. ʒj in a six ounce mixture, one ounce being the dose for an adult.

Mr. Hope, of Chatham, in the 'Edin. Med. and Surg. Journal' of July 1826, recommended nitrous acid in cholera. He spoke strongly of the efficacy of the following mixture:

℞. Acidi nitrosi ʒj.: misturæ camphoræ ℥viij. Misce, et adde tincturæ opii ♏ij.

Of this one-fourth is to be taken every three or four hours. Mr. Whiteman, of Putney, informs me that he finds nitrous acid so prompt and so satisfactory a remedy in epidemic diarrhœa, that he trusts to it in preference to every other medicine. He often combines with it a little laudanum, but in the majority of cases, he uses the acid alone. I have not used nitrous acid in diarrhœa or cholera; but I have no doubt as to its value in arresting the discharges.

5. *Nitrate of Silver*, I have not given in cholera and diarrhœa, except in the form of enema. It is valuable in this form. My experience is too limited to enable me to compare the efficiency of enemata of nitrate of silver with enemata of acetate of lead, and of alum.

Dr. Lever and Dr. Aitkin are the principal English writers who advocate the use of nitrate of silver in cholera and diarrhœa. On the continent, the authorities by whom it is recommended are Hirsch, Canstatt, Boudin, Bouchardat, and Trousseau. Dr. Charles Lever, in 1832 extolled the nitrate of silver as a remedy in cholera. In a forlorn case, he administered thirty grains dissolved in three ounces of distilled water, which the patient swallowed at once. She lay quiet for six minutes, when she vomited a small quantity of whitish turbid fluid. She had no return of the vomiting, fell asleep, and recovered, ('Johnson's Medico-Chirurgical Review,' Oct., 1834, p. 444.) I give ten grains in half a pint of water as an enema. Hirsch prescribed it in the form of mixture; and I am sure that it is a safe medicine in this form, as I have given it internally in other diseases, dissolved in abundance of water. The danger lies in giving the medicine in too concentrated a form.

6. *Quinine.* Of the power of quinine to check epidemic diarrhœa, and to thus arrest cholera in what may be regarded as its first stage, I feel well assured, from an extensive use of the remedy. It is true that I have generally combined it with sulphuric acid, or with iron, and sometimes with both; so that my facts are not available for the purpose of accurately determining the value of the quinine given alone. Dr. James Bird and others have, however, from ampler data, arrived at the same conclusion. Dr. Mandl, in the 'Gazette Medicale' of Oct. 29th, p. 682, speaking of the importance of checking the diarrhœa which he has generally found in the initiatory stage of cholera, says, "the most powerful means of arresting epidemic diarrhœa, is by administering disulphate of quinine in doses of ten centigrammes (a grain and a half) every two hours." He says that he has seen cases of cholerine, in which opium and injections had failed to arrest the discharge from the bowels, cured by quinine in twenty-four hours. Dr. Charles Bell, who has written so ably in favour of the doctrine that cholera is a fever of a remittent or intermittent type, naturally advises quinine. He says: "If asked what I should do in a case of cholera, I should answer, that that depended very much on the stage in which I found my patient; but, in all cases and in all stages, I should certainly give a largely diluted solution of some salts of iron and quinine, with a view to counteract the morbid inactivity of capillary congestion, and repeat it as often as the patient would drink of it, till warmth was restored." The practice is, there can be little doubt, correct; but it is equally probable that it is a method well calculated to stop the diarrhœa, which Dr. Bell strangely considers salutary. He makes this dangerous announcement:—"Diarrhœa is a natural mode of relief to congestion, and thereby tends to the prolongation of life." The

hemorrhage from the stomach thrown up as black vomit in yellow fever, is nature's mode of relieving congestion; but it is not a salutary hemorrhage. Within certain limits, a serous or a sero-sanguineous discharge may be harmless, or even useful; but inasmuch as it is physically impossible for the blood to circulate when it has been deprived of its serum, so is it imperative upon the practitioner to restrain the serous evacuations of cholera.

7 and 8. *Gallic Acid and Alum.* I have often used these remedies in the diarrhœa of phthisis, and occasionally in epidemic cholerine. They are less to be relied on as means of arresting serous diarrhœa than creasote and the mineral acids. They are not superior, and hardly equal to logwood and catechu, as mere astringents; but I know that some authors regard them as especially the astringents to be used in cholera and serous diarrhœa.

9. *Acetate of Lead* may be used internally alone, or in combination with opium. It is generally a prompt astringent when used in the form of enema.

I have not space to enter upon a consideration of all of several reasonable methods of treatment which have attracted the attention of the profession, and deserve to be spoken of with respect. I can only notice one of them at present.

The *Sulphur* plan, as advocated by Mr. Grove, of Wandsworth, has evidence in its favour, though I do not think that the theoretical ground —the fungus theory of cholera—upon which it is advocated, is tenable. Mr. Grove uses the following formula:—

℞. Sulphuris precipitati ℥j.; sodæ bicarbonatis ℥j.; sp. lavandulæ compositi ℥vj.; aquæ q. s. ut fiat mistura ℥iij.

A teaspoonful of this is taken every half hour or every quarter of an hour. Mr. Grove informs me that the effect of the medicine is to restore warmth, and promptly to check the serous discharges.

I believe Mr. Blacklock was the first author who recommended sulphur as a remedy for cholera. Although I have no personal experience of its virtues, I may quote, in connexion with this subject, the following passage from a letter dated Sept. 22, 184., which I received from a non-medical friend residing in Edinburgh:—

"I saw a man to-day from the south muirs, who told me that his wife and he, as well as many of the people of his remote landward parish, had been very unwell; and, from the symptoms which he mentioned, it was clear that they had suffered from cholera, and had been saved from it. They had no medical man near them, and got no medical attendance; yet there were no deaths. As soon as they found cramps come over them, they took a teaspoonful of powdered brimstone, or sometimes the flowers of sulphur, mixed with a little whiskey, to which was added water, if the sick could not otherwise swallow the dose. The man described the cure as certain and very rapid. Try this on the London folks; it may serve the afflicted, and do you much good."

Mitchell says that, "the sulphureous localities of the sickly island of St. Lucia are its only salubrious places. Cities, too, which abound in sulphur products.....enjoy an immunity from ague, for which they are everywhere noted. Immediately around the sulphur works, and factories for making gunpowder and sulphuric acid, the vegetation and the ague disappear together." To this we may add, that, in 1849, during the bombardment of Rome, that city suffered much less than usual from malarious fevers—a fact which induced Mr. Walker to recommend cannonading, and the discharge of fireworks, as measures likely to ward off, or prevent the spread of, cholera. The rushing of columns of air, caused by the production of a vacuum, is, however, the more probable explanation of the benefits (if any) which resulted from the cannonade. Mr. Blacklock (Madras, 1848) says: "I hope yet to see the day when sulphur, in small quantities, will be regularly issued to every soldier in the field, in India, say forty grains per day, while actually marching, and twenty grains per day, during halts, as a sure way of warding off this terrible disease; and I have a firm belief that sulphur, so employed, will be as effectual in banishing cholera from our armies, as lime-juice has been in eradicating scurvy from our fleets."

Mr. Grove quotes the following curious passage from the 'London Practice of Physic'—a work published in 1692: "In the year 1670, about the autumnal equinox, a world of people here were seized with a most dangerous flux (though without blood), and joined with a cruel vomiting, which presently caused great faintings and a total decay of strength. For the cure of this disease, no evacuation did good; nay, bleeding, vomiting, and purging did hurt: only cordials, and those of the hottest nature, to wit, such as abounded with *spirit and sulphur*, did good." (p. 22.) From this, it would appear that the whiskey and sulphur treatment of the south muirs of Scotland is an old tradition.

Manec administered sulphur in all possible forms, in his treatment of Cholera in the Saltpêtrière in 1849.

Sulphur is a stimulant of the capillary circulation, and so is camphor—one of our best remedies against collapse. Perhaps the combination of the sulphur with hydrogen is the cause of the augmented heat in the surface of those who take the former in repeated doses. The characteristically offensive smell of sulphuretted hydrogen gas is sufficient proof that this chemical action does take place. The therapeutic action of sulphur is, however, yet open to investigation.

The treatment of cholera cannot be reduced to any routine formulary, but ought to be adapted to the particular condition of each patient in each stage of the disease.

The principal indications of treatment may be thus summed up:

1. The "rice-water" vomit and purging require to be energetically subdued by quinine, sulphuric and other acids, creasote, nitrate of silver, and such like remedies.
2. In actual and threatened collapse, external warmth, stimulant

embrocations, and those internal stimulants which act on the capillaries, are of signal benefit.

3. In reaction, and during convalescence, local inflammations and congestions require to be guarded against or subdued; and rational means must be adopted to restore the secretions of the liver, kidneys, and skin, but particularly of the two former.
4. Lastly, though not of less importance, the character of the fever should be modified, and a repetition of the paroxysm guarded against, by change of air, or by the administration of quinine, which, in the majority of cases, from the existence of anæmia, ought to be conjoined with iron.—*Association Medical Journal, Nov.* 11, 1853, *p.* 990.

149.—*Treatment of Cholera by Galvanism.* By C. Meinig, Esq.—[Mr. Meinig calls attention to the remarkable influence of mild continuous currents of electricity in cases of choleraic diarrhœa.]

The symptoms were—violent diarrhœa, pains and strong movements in the bowels; in two cases vomiting, and in one case cramping sensations in the legs accompanying the diarrhœa.

The positive disc of one of my portable Electro-Generators was applied to the spine between the shoulders, the negative pole was placed on the abdominal region, and moved higher up and lower down according to the varying seat of the pains and coldness in the bowels. The effect of the current was perceived at once, in a feeling of warmth and tone in the bowels, and the pains disappeared in about half an hour entirely; but the diarrhœa and vomiting subsided only gradually, in the course of from two to five hours, when proportionately slight weakness was left. The urine re-appeared shortly after the application, probably through the action of the current on the urinary organs.

I have witnessed these results, in eight cases, one of them in my own person, in which case I purposely abstained from employing any other remedy whatever. It was found necessary to communicate the current to the abdomen by means of a metallic plate, of sufficient size to cover the whole abdominal region, as the patients complained that the warmth was limited to the exact position of the small disc, and did not sufficiently pervade the whole abdomen. In one or two cases, I observed the remarkable circumstance, that while the diarrhœa lasted the pricking sensation at the negative pole was almost nil, whereas after the disappearance of the complaint, the skin was blistered in about a quarter of an hour by the power of the current.

Now, Sir, I certainly look upon these observations as of sufficient importance at the present juncture to induce physicians to test their validity; the more so, as it can be done without trouble, without precluding the use of other remedies, and as the successful results here stated may very easily be accounted for.

Whatever may be the difference of opinion as to the cause of cholera, and the nature of its symptoms, and consequent treatment, two points will be conceded by most thinking men :—

1. That it is of the utmost importance to keep up the power of the central as well as of the digestive system, so that, if diarrhœa there must be, the other functions are disturbed as little as possible.

2. That in this disease that remedy is the most preferable and certain of effect, which is the most directly applicable, and the most independent of the disturbed digestive functions.

In sending a continuous mild stream of electricity (no interrupted or shock current) from the spine to the abdomen, I vitalize—keep up the power of the whole central and digestive systems, and by keeping in action all functions, I prevent the diarrhœa from taking a virulent and passive character. I do this instantly, independently of digestive functions, strongly or mildly, continuously or intermittingly, at option.

All the effects purporting to be produced by the means generally employed, are produced much more perfectly and instantaneously by this simple application.

However, volumes of reasoning will never supply the test of experience ; therefore, let it be tried, and stand upon its own merits ; this is all that I call for, and I will, with the greatest pleasure, supply any number of apparatus deemed necessary to decide the question.

With regard to cases of collapse, I cannot speak from experience, never having witnessed such a case. It is, however, a fact, witnessed by me dozens of times, and very easily ascertained, that spasms and cramps of the ordinary description cease in a few minutes under the influence of strong, but continuous (not shock) currents along the spine and contracted limbs ; and with regard to the maintenance of irritation in any given part of the body, it will be obvious to every one that no other means at command can bear the most distant comparison with electricity for such purpose.

In cases of collapse, I would fix a generator, one disc on the spine, the other on the abdomen, as above stated, and, in addition, I would send the strong continuous current from a battery, first along the spine, and from the spine along the contracted parts, also through the liver, stomach, and bowels ; a few shocks to be used only where it was necessary momentarily to stir up the whole system—in fact to keep up life. —*Med. Times and Gazette, Sept.* 23, 1854, *p.* 324.

150.—*Treatment of Cholera by small and frequent doses of Calomel.* By Dr. Ayre, Hull.—[Dr. Ayre remonstrates with Dr. Gull for his report on cholera drawn up at the request of the College of Physicians. Dr. Gull states his belief that no remedy has yet been found, and that the calomel treatment has failed like the rest. We believe this to be in some measure true ; and yet, after all, it is one of the best modes

of treatment which we have seen, especially as adopted by Dr. Ayre of Hull. This gentleman gives, in the stage of collapse, one or two grains of calomel every five or ten minutes, with one or two drops of laudanum with the first few doses. He continues the calomel until the collapse materially abates. This treatment, however, must not be classed with the calomel treatment in larger doses and at longer intervals. Dr. Ayre never gives stimulants in any form.]—*Lancet, May* 20, 1854, *p.* 536.

151.—*Treatment of Cholera by Yeast and Turpentine.* By L. F. Crummey, Esq., Middlesbro'-on-Tees.—To the congregation of certain symptoms we give the name of typhus; to others, measles; to others, small-pox, &c.; but we know nothing concerning the agent producing them. Just the same may be said of cholera. We believe that the poison which occasions this fearful disease emanates from certain conditions of matter, but beyond this we are totally ignorant. The opinion which I formed of the *nature* of cholera in 1832, all subsequent experience has tended to establish—that it is a *febrile* disease, occurs sporadically as well as epidemically, and is essentially contagious. The *rationale* of *treatment* then adopted I have no reason to relinquish. Experience has induced variety in the means; but the purpose—the expulsion or counteraction of the poison—constitutes the main object of my endeavours to this day. The present alarming outbreak of the disease in this town has supplied the opportunity for so testing the practice as to warrant its recommendation to the profession.

It is a serious question for the medical profession to determine whether the premonitory diarrhœa of cholera should be indiscriminately arrested; and it becomes no less an important public inquiry, seeing the universal administration of what are called "astringents," from the comfortable *ad libitum* brandy and water to the most popular quack specifics. In the belief that the vomiting and purging, so characteristic of cholera, do not constitute the *disease*, but are simply an effort of nature to throw off the poison, I should as soon think of trying to arrest these indiscriminately by astringents as to suppress the skin eruption in measles, small pox, &c. In all cases of bowel irritation, during the prevalence or apprehension of cholera, I prescribe castor oil, combined with any of the preparations of ammonia. In every stage of real cholera, from the first onset of diarrhœa to the very verge of collapse, I give either castor oil and oil of turpentine, or the latter with yeast. I never saw an instance where immediate relief to the symptoms did not follow, and scarcely one where the stage of collapse supervened—nay, even the last fatal prostration has in some remarkable instances during the present epidemic been changed into reaction and recovery by the turpentine and yeast. But from a knowledge of the potent effects of yeast in malignant typhus, small-pox, &c., I was first induced to try it in cholera, combined with the

turpentine; and certainly, if fresh brewer's yeast could always be obtained, I should use no other remedy than the following combination:—Yeast, a table-spoonful; oil of turpentine, a teaspoonful; cold water or barley-water, two tablespoonsful: the dose to be repeated every second, third, or fourth hour, according to circumstances.—*Lancet, Aug.* 26, 1854, *p.* 178.

152.—*Treatment of Cholera by Oxygen Gas.* By Dr. Thomas O'Brien, Calcutta.—[Dr. O'Brien strongly recommends the use of oxygen gas in this disease. Writing from Calcutta, he says:]—This awful scourge is always here, but the people do not at all think it contagious, and natives attacked by it are received into any of the hospitals, and placed with all classes of patients, either medical or surgical. The saline treatment seems to have obtained here, but I cannot say much for its success. I never give opium. I give calomel freely, combined with camphor. The mixture I give is, sp. vin. camphorat., creasote, brandy, and soda-water. I have always given oxygen gas, which I did when in the Galway union, where this treatment was equally successful, as you can see by my reports to the Board of Health. This gas is easily given by shaking powdered chlorate of potash on a heated surface, and making the patient inhale the fumes. When the vomiting is severe, I have found firing over the stomach and abdomen avert it, and produce heat; but the oxygen gas is that upon which I would place most reliance. Transfusion has been often tried, but without success. Should you have an opportunity of trying the gas, will you do so? and let me know the result. I always give as much cold water as can be swallowed, and where the evacuations are copious, I have injected chicken broth with O'Beirne's tube; this has sometimes been retained for a considerable time.

[Oxygen gas may be readily generated by intimately mixing chlorate of potash with one-sixth its weight of black oxide of manganese, and throwing the mixture on an iron shovel heated to dull redness.—*Ed. Dublin Hos. Gaz.*]—*Dublin Hospital Gazette, Feb.* 1, 1854, *p.* 14.

153.—*Treatment of Cholera by Eupatorium Villosum and Nervosum.* By Dr. W. E. Stulo, Dublin.—[The following is from the letter of a friend of Dr. Stulo in Jamaica. It refers to a novel remedy for cholera.]

"I have put up a box of the bitter bush, *Eupatorium*, for this packet; and, should an opportunity offer, I hope it will be tested, as I am satisfied it will be found a safe and sure remedy in cholera. I have given it, with remarkable success, in every stage of the disease, even after collapse, and have not heard of a single death when the remedy has been administered in time, and persevered in. It is used by making a strong decoction by boiling about two drachms in a pint of

water, and giving a small teacupful, cold, every half-hour until the symptoms abate. In severe cases it is given alternately with the saline powders recommended by the Board of Health. In simple diarrhœa, one dose is generally found sufficient. The first dose often produces vomiting; in such cases repeat the dose immediately. It is certainly a wonderful remedy, and the effect of it sometimes appears to be magical. I have used two species of it, which appear to be *Eupatorium Villosum* and *E. Nervosum*. That used in St. Ann's is, I believe, the *E. Rigidum*. We have several species here, all of which appear to possess the same active properties, but those I have named appear the best. The box I have sent contains the two species I have used; they are very similar, except that one (which I think the best, *E. Nervosum*,) is inodorous, and that the other possesses a strong fragrance, which we think to be *E. Villosum*. The *E. Odoratum* is also common here."

It is right to state that the writer of the foregoing is not in the medical profession; still his observations on this plant should not on that account, be disregarded. We know that several of the *Eupatoria* possess very active properties. Some are emetic and purgative, as our native *E. Cannabinum;* while others are powerfully astringent, or even styptic, as the *Matico E. Glutinosum*. Probably the *E. Nervosum* and *E. Villosum*, and others whose efficacy has thus been stated in cholera, are powerfully astringent, and on that account may have a decided effect in restraining the choleraic diarrhœa, and thus give time for using the other remedies for restoring the heat and vital powers, which, from the continued drain of the fluid part of the blood, would otherwise inevitably end fatally.—*Lancet, Aug.* 5, 1854, *p.* 113.

154.—*Treatment of Cholera by Sulphuric Acid, Strychnia, &c.* By W. Wilkinson, Esq., Sydenham.

Cholera may be divided into three stages—

The first, or preliminary stage, being diarrhœa, painless or otherwise.

The second, diarrhœa continued, motions extremely thin, and devoid of fæcal smell, cramps, &c.

The third being the stage of collapse, with unconsciousness, &c.

The first stage may be generally relieved by the exhibition of a *stimulant* emetic, which, by evacuating the stomach, prevents any accumulation of irritative matter there, and by its revulsive power produces a general alterative effect. This is to be followed by the following pills:—Chloride of mercury, five grains; ipecacuanha powder, half a grain; soap and opium pill, ten grains; divided into three pills.

The calomel as well as the ipecacuanha to act upon the secretions, and thus relieve the bowel of any viscid irritative matter; the opium to relieve or prevent pain, nervous irritation, and excitement, (so constantly followed by depression;) and with the ipecacuanha to produce an effect upon the capillaries of the skin, and thus cause a sympathetic

derivative action. This may be followed by an evacuant, consisting of rhubarb and magnesia, with compound cinnamon powder and water.

This, even in the early part of the second stage, will be sufficient sometimes to cure the patient; but if the serous fluid lost be considerable, or if the disease should run into its third stage, it is of importance to administer some astringent which can be depended upon, together with some medicine, so to uphold or stimulate the nervous power, as to prevent entire loss of control over the capillaries of the intestinal mucous membrane.

From my own experience in diarrhœa and some few cases of cholera, I can corroborate the opinions of several members of our profession as to the efficacy of sulphuric acid; therefore I should—in every case in the second stage, after the preliminary treatment, or immediately in the third stage, when, from the copious action of the bowels, the preliminary treatment would be unnecessary—prescribe, dilute sulphuric acid, half a fluid drachm; strychnia in acid phosphoric solution, one-sixteenth of a grain. This medicine to be taken as frequently as the urgency of the symptoms might render it necessary. The sulphuric acid may be depended on, I think, as an astringent, and the strychnia would also be of the greatest benefit to uphold or stimulate the nervous power, and thus prevent that loss of control over the capillaries, which seems productive of such infinite mischief.—*Lancet, August* 5, 1854, *p.* 100.

155.—ON THE PATHOLOGY AND TREATMENT OF LARYNGO-TRACHEAL INFLAMMATION.

By Dr. Robert Turner, Keith.

Observation and reflection have impressed me with the belief that a common pathogenic condition pervades all inflammatory affections of the laryngo-tracheal mucous membrane; and that to this condition their leading characteristic, stridulous respiration, as well as their tendency to a fatal termination, is chiefly due: in other words, that the essential element of this class of diseases—of *laryngitis*, acute and chronic, and of *croup*, in all its varieties—is the same. My object in the present communication is to develope these views, and to point out what I conceive to be their application to practice.

The following positions embody a statement of some points in the physiology of the larynx; which, although well ascertained facts in vital dynamics, have not, I believe, obtained a due practical recognition in pathology and therapeutics.

I. *The terminal branches of the superior laryngeal or excitor nerve of the larynx being distributed principally to the mucous membrane of the glottis, a higher degree of sensibility resides there than in any other part of the respiratory tube.*

II. *This sensibility is evinced by closure of the glottis, effected by*

the muscles in which the motor nerves of the larynx (the recurrent laryngeal and the crico-thyroid branch of the superior laryngeal) terminate.

III. *It is by this act alone that apnœa, or even stridulous respiration, depending on contraction, can take place—the absence, below the glottis, of muscular fibres capable of acting in such a direction as to diminish calibre, and the unyielding cartilaginous rings in the walls of the tube rendering constriction in that situation physically impossible.*

The vigilance of the *sentinel perdu*, stationed at the approach to the respiratory organs, and the promptitude with which its warnings are responded to, are facts so familiar as to need no illustration; but such an opportunity as occurred to me in the instance related below (Case 1) of estimating the degree of force which may be exerted in this conservative act, is not, I believe, often enjoyed.

Under the term *spasm* the participation of the glottidean contraction in the phenomena of inflammatory affections of the laryngo-tracheal mucous membrane and submucous tissue has been recognized by many systematic writers, from the days of Cullen downwards. It will, however, be my endeavour to show that its true semeiological and pathological import, in these circumstances, has been misapprehended or underrated by all. It is unnecessary to notice every allusion that has been made by authors to the (so called) *spasmodic element* of the diseases under consideration, as the sentiments expressed by our latest and most esteemed authorities fairly represent the general state of opinion on the point. Dr. C. J. B. Williams ('Library of Medicine,' art. *Tracheitis*) refers to it as arising from the increased sensibility of the inflamed mucous membrane, from interstitial effusion in the lining of the trachea and larynx, and from the presence of false membrane within the tube. Dr. Cheyne ascribes the difficulty of breathing in laryngitis "partly to spasm caused by inflammation of the membrane" ('Cyclopædia of Practical Medicine,' art. *Laryngitis);* Dr. West, ('Lectures on the Diseases of Infancy and Childhood,' 2nd ed., pp. 249-53 *passim*), in speaking of croup, alludes to "that spasmodic condition of the muscles of the glottis which endangers the patient's life more than the mere extent of false membrane in the air-passages," and again to "that spasm of the glottis which the inflammation occasions"; and Dr. Maunsell (Evanson and Maunsell 'On the Management and Diseases of Children,' 5th ed., p. 329) observes, "Every affection of the larynx is subject to exacerbations which partake much of a spasmodic character; and a paroxysm of this nature may occur at an early period of true croup, and destroy the patient's life before there has been time for any very important results of inflammation to be produced."

Other modern authorities of equal mark ignore, or by implication deny the occurrence of this spasmodic condition in the same circumstances; Dr. Copland discussing the value of tracheotomy in croup, without adverting to the spasmodic element at all, ('Dictionary of

Practical Medicine,' art. *Croup*); and Dr. Watson ('Lectures on the Principles and Practice of Physic,' 3rd ed., vol. 1, pp. 844-6) referring the dyspnœa in this affection to the mechanical obstruction of the air-tube by "preternatural membrane, or serous or mucous or puriform matter," in one class of cases; and, in another, "mainly to thickening of the mucous membrane."

It will, however, be generally conceded that the broad fact of the presence of what has been designated *spasm*, in inflammatory disease of the larynx and trachea, rests on as certain grounds as any other article of belief in pathology not absolutely demonstrable by the researches of the morbid anatomist. A convincing argument in support of it is thus stated by Dr. Williams (*op. citat.*, p. 56): "The share which spasm has in causing the dyspnœa (of croup) may be inferred from the fact that in no case have the air-passages been found so much blocked up by the albuminous secretion as to account for the amount of the obstruction; and in many cases the constriction has appeared greatest where little or no exudation has been found after death." The same inference is plainly deducible from Dr. Cheyne's statement to the effect that, in fatal cases of croup, a space of *three-eighths of an inch* usually exists in the larynx for the transmission of air, although this result of his extensive observation has received a different explanation from Dr. Cheyne himself.

Inflammation of the mucous membrane, then, singly, or combined with any or both of its consequences, tumefaction of the tissue of the glottis from interstitial effusion, and fibrinous deposit within the tube, are the morbid conditions held to be capable of inducing contraction of the *rima glottidis*—an opinion in which all who are conversant with the clinical history and the revelations of the scalpel after death, in the diseases under consideration, will readily concur; and this doctrine, viewed in connection with the anatomico-physiological considerations above stated, inevitably leads to the following conclusions:—

I. *In every form, case, and stage of laryngo-tracheal inflammation, when a degree of severity of which stridulous respiration is the token has been attained, there exists a structural lesion which will excite to action the constrictor muscles of the glottis.*

II. *This glottidean contraction must greatly preponderate over, if it do not entirely supplant, all other pathological conditions, in these diseases, as a direct cause of impediment to the access of air.*

For the reasons already assigned, it is evident that any influence which the muscular fibres of the trachea can exert in occasioning dyspnœa, by lessening the calibre of the tube, will be of a very subsidiary kind, when co-existing with the glottidean contraction. The opinion, therefore, of Drs. Cheyne and Williams, who attribute an equal share to "spasm" in both situations in the production of "the croupy inspiration and cough, and the hoarseness" ('Library of Medicine,' vol. iii, p. 56, and 'Cyclopædia of Practical Medicine,' vol. iii,

p. 22), is manifestly untenable. On the same grounds, the estimate of the last-named authority *(loc. cit.)* respecting the agency of "effusion in the lining of the trachea and larynx," and of the pseudo-membranous tubular deposit in their interior obstructing the passage of air "directly by their bulk," must also be regarded as erroneous. The anatomical characters of laryngo-tracheal inflammation, in short, are of less pathogenic importance *per se* than by reason of their indirect tendency in inducing the excito-motor act of constriction of the glottis.

III. *When the inflammatory action is once excited, it will, if continuing unabated, maintain the glottidean contraction throughout the attack, whilst the function of the true spinal system of nerves remains unimpaired.*

This deduction, so far as I have been able to ascertain, is opposed to all views hitherto advanced on this subject, with the single exception of those of Dr. West, which I shall afterwards have occasion to notice more particularly. The two writers last quoted are, I believe, those who have spoken most definitely on the point; both refer to the glottidean contraction in inflammation of the laryngo-tracheal mucous membrane, as a transient condition, a "temporary spasm," liable to complete remissions; and the one describes it as marking the onset ('Cyclop. of Pract. Medicine,' vol. iii, p. 22), whilst the other ('Lib. of Medicine,' vol. iii, p. 54) recognises its presence "particularly in the advanced stages" of the disease—a contrariety of opinion the adjustment of which it appears unnecessary to attempt, as the conclusion last stated negatives alike each of the conflicting assertions. It is questionable, indeed, whether the term *spasm* can with strict propriety be applied to this muscular contraction at all. "Spasm," according to Dr. Latham's definition—an exact explanation, I believe, of the meaning usually attached to the term—"is a mode of action in muscular structures different from or beyond the natural and accustomed mode;" but the glottidean contraction accompanying laryngo-tracheal inflammation is a normal act, although called forth by a morbid excitant. If spasm it must be called, it is at any rate a *tonic* spasm: and although *apparent* remissions and exacerbations of dyspnœa are undoubtedly exhibited, with more or less distinctness, in all cases, at irregular intervals throughout the attack, the causation of these admits of a satisfactory explanation, in strict accordance with the views I am endeavouring to establish: for the glottidean contraction, from the moment of its first occurrence. will originate a condition directly antagonistic of itself. By impeding the access of air to the lungs, and, therefore, of a due supply of oxygen to the blood, it will give rise to a gradual poisoning of the latter by carbonic acid. The effect of this toxæmia in the nervous centres, when it has attained a certain degree of intensity, will be to impair the energy of the *vis nervosa;* relaxation of the glottidean constriction must follow, and the

stridor of the respiration will abate, or altogether cease for a time. The aeration of the blood will then be in some measure renewed, and the nervous power so far restored as to permit the glottidean contraction to resume its sway, and maintain it until again overborne by the influence of the blood-poisoning which it will in turn re-induce. Unless arrested by treatment, this alternation of opposed pathological states will go on, the toxæmia gradually gaining the ascendancy, until the function of the true spinal system is abolished, and a fatal result succeeds. Some diversity of opinion exists in regard to the mode in which this is brought about. According to most authorities, it occurs by *asphyxia*—a term for which Dr. Watson ('Lectures,' &c.) proposes to substitute "*apnœa*"; and Dr. William Budd ('Medical Times and Gazette' for June 19th, 1852) the expression, "*death by privation of oxygen.*" The views I entertain of the pathology of these affections suggest the phrase "*death by toxæmic coma,*" as a more accurate description of the fatal termination in the circumstances in question.

In a direct ratio with the severity of the inflammatory action, but also modified, perhaps, in some measure, by peculiarity of constitution, will be the urgency of the symptoms depending on the glottidean contraction and the toxæmia respectively. It, therefore, varies much in the different forms of laryngo-tracheal inflammation, and even in different cases of the same variety of it; but the difference, in all circumstances, is only that of degree. The frightful

"Gasp and tug for life—the nostril stretched with struggling"—

of sthenic croup, and the calm *habitual* stridor of chronic laryngitis, equally betoken the narrowed glottis. The livid countenance and dull eye of the first, and the pallid aspect and cold extremities of the last-named affection, signify alike the injurious influence of maloxygenated blood.

But, it may be objected, why does this glottidean contraction here stop short of effecting the complete closure of the orifice, and inducing the sudden asphyxia which is observed to ensue from it in other affections, as in *laryngismus stridulus* and the severer forms of *hooping-cough;* as well as from the contact with the rima glottidis of noxious gas, or solid or liquid particles? The explanation appears to be that, in the circumstances just enumerated, this action is excited more intensely than by inflammation of the mucous membrane, and abruptly, when the condition of the circulating fluid affords no counteracting influence to muscular contractility; whereas, in laryngo-tracheal inflammation, the contraction supervenes, *pari passu*, with an exciting cause growing in intensity as the disease proceeds, and affording time for the development of a controlling and opposing condition of the nervous centres.

IV. *The glottidean contraction will further impede the ingress of air to the lungs by preventing expectoration.*

Much of the inflammatory products, solid and fluid, which accumu-

late in the trachea and bronchi in protracted cases, would doubtless be ejected, if a more patent state of the orifice existed throughout the attack. Dr. Watson ('Lectures,' &c., loc. cit.), in commenting on a case of croup reported by M. Chevalier in the sixth volume of the 'Medico-Chirurgical Transactions,' and in which tracheotomy was performed with success, observes: "The effect produced by the operation was very instructive. Air was fully inspired through the opening; then a strong cough took place, by which a large quantity of viscid reddish mucus was forced out by the natural channel through the glottis. It was evident that the child could not expectorate before, simply because it could not sufficiently fill its lungs with air to drive the collected mucus out." I submit with deference, however, that. for "*simply*", in the last sentence, we ought to substitute *partly*, and add *but chiefly on account of the constriction of the glottis.* By surgical interference, no doubt, air in sufficient volume for the act of expectoration was admitted; but if the operation had not, at the same time, relieved the glottis from the contact of the current of inspired air, and thus rendered the constriction more easy to be overcome, it seems obvious that little if any of the accumulated mucus could have been got rid of in the manner described. No mention is made in this case of the more characteristic product of the disease. If it existed here, and was not expectorated in membranous shreds, it may still have been ejected in the form of pus—a fluid into which, as pointed out by Dr. Budd ('Medical Times and Gazette,' loc. citat.), it has a tendency to degenerate. "The histological and other characters of the exudation," he observes, "are very important. If you examine a portion of the false membrane under the microscope, you will see that it is essentially made up of cells or corpuscles lying in a granular blastema These cells bear, as you will remark, a very close resemblance to the. common pus-corpuscle. Pus-corpuscles are, in fact, none other than these cells, dead. . . This close affinity of the exudation to pus is, in croup, a character of great moment; since, in virtue of it, a product, which was at first solid and adherent, may, by a slight change of conditions, give place to a fluid secretion. In cases of recovery, some such secretion always supersedes the croupal"—where this is present —"and is, in fact, the chief instrument of that separation from the surface beneath which prepares the way for its ejection."

v. *The other obstacles to the access of air to the lungs, which arise in protracted cases, are traceable, indirectly, to the glottidean contraction. The state of toxæmia it occasions will, when this has been of some duration, produce sanguineous engorgement of the lungs, and consequent serous effusion into the air-cells and lesser bronchial tubes, and thus another mechanical cause of obstruction to the function of respiration will be established.*

Applying the test of clinical observation to these *à priori* deductions, we shall find that it yields them, in many respects, unequivocal support.

The auscultatory signs in every case and stage of the diseases under consideration, when stridor of the cough and respiration has been set up, will be found to point to the aperture of the respiratory tube as its principal seat. In those instances in which the embarrassment of the respiration is greatest, and which advances most rapidly to a fatal termination, it is a fact, attested, as we have seen, by various observers, that no *post mortem* appearance is found to which the severity of the symptoms or the early issue in death can be attributed. The phenomena and the result must, therefore, have mainly depended on a pathological state which existed only during life, and which, for the reasons already assigned, *could have been* no other than the glottidean contraction.

What is the condition of the patient during the so-called "remission" of croup, for example? A soporose, or, as Dr. Williams expresses it, "a half stupid state," clearly signifying cerebral oppression from malaërated blood, and gradually deepening, as the case advances, into the perfect coma, with or without convulsions, which closes the scene.

Detached portions of false membrane, sometimes of a tubular form, and of considerable size, are, it is well known, occasionally ejected during an attack of croup; but it is matter of common observation that, in general, no favourable augury is derivable from the circumstance, for that it occurs oftenest towards the close of a hopeless case. Does not this tell us of relaxation of the glottidean constriction, delayed until irretrievable injury has been done to the brain by the prolonged circulation through it of non-arterialised blood?

The presence of false membrane in the lower part of the trachea and bronchi, with copious mucus or muco-purulent secretion in these situations, are appearances more especially appertaining to the asthenic variety of the same disease, to cases comparatively slow in their course, and little marked by cessations and aggravations of dyspnœa; because in these the inflammation has been more moderate in degree than in the more acute form, and has excited a less energetic contraction of the glottidean muscles, allowing time for the extension of the morbid action and its results farther down the tube.

A remarkable regularity, as regards the time of invasion of the developed stage of croup, has been noted by all writers on the subject, and is indeed a well known characteristic of the disease. In one case, the premonitory catarrhal symptoms may be present for a day or two preceding; for about the same length of time, in another, slight uneasiness in the throat may be complained of, and, if this have attracted notice, inspection may reveal the diphtheritic exudation, with surrounding redness on the tonsils and uvula; in a third, the little patient may have retired to rest in apparently perfect health; but, in all, the probability is, that the first announcement of the accession of the stage in question of this malady—the first hard ringing cough—will occur early in the night, and during sleep; and the same proclivity to

nocturnal invasion or aggravation of stridor, although it has excited more general attention in this the most common disease of the class, is observable, and has also been recognised, in the other forms of laryngo-tracheal inflammation.

The explanation of this peculiarity will flow from the doctrine above advanced regarding the *rationale* of stridulous cough and respiration. "Volition", says Dr. Marshall Hall ('On the Diseases and Derangements of the Nervous System,' p. 254), "has a constant influence over some of the muscular actions, of which we are almost unconscious, and which we only discover by carefully observing the effects of its subtraction. The acts of respiration, originating, as they do, in the reflex function of the spinal marrow, are nevertheless regulated and rendered equable by this silent but constant influence and agency of volition." And thus a degree of inflammatory action in the laryngeal mucous membrane which is insufficient to excite the glottidean contraction, when the muscular apparatus concerned in it is under the full control of the cerebral system, will be adequate to the production of the act in question, during sleep, when this controlling power is greatly in abeyance.

The bearing of these pathological speculations on the *therapeutics* of laryngo-tracheal inflammation may next be considered. Their general tendency undoubtedly is to inculcate promptitude and diligence in the use of remedial measures, as the sole conditions on which success is attainable. We possess resources by which, if employed energetically at the onset of the disease, the *fons et origo mali* may be directly combated, and the speedy arrestment of the malady often procured; but if this be permitted to reach an advanced stage unchecked by treatment, the morbid conditions existing from the first will be so much increased in severity, and so many new sources of danger will have been added as to present an array of obstacles to recovery against which it is utterly hopeless to contend.

A general, and the leading curative indication will of course be *to overcome the glottidean contraction.* In acute cases, this must be attempted not alone by means calculated to subdue the inflammatory condition on which the contraction depends, for, in many instances, life would be extinguished before our object could be attained in this way; but we must also endeavour to procure the immediate and prolonged suspension of the perverted reflex action, in order to gain sufficient time for the removal of its exciting cause. If we cannot first *palliate*, we shall often fail in our efforts to *cure.* It is found, accordingly, of greatest utility in these circumstances are those which can subserve both ends; bloodletting (general and local), tartarised antimony, and the warm bath, being relaxants as well as antiphlogistics; and I believe that, but for the co-operation of these agents, in virtue of their first named property, the remedial action of calomel, although a medicine of undoubted efficacy in the radical treatment of the diseases under consideration, would often come too late.

A complete examination of the *methodus medendi* in these diseases does not fall within the scope of the present communication, but a few cursory remarks on the subject may be permitted me.

In common with many practitioners of experience, I have been led to form a very high opinion of the value of tartarised antimony as a therapeutic agent in every form of laryngo-tracheal inflammation. In one variety (croup), it is regarded by some as the chief remedy—an estimate to which both theory and observation induce me to assent. I have found that its remedial influence is here best obtained by exhibiting it at first in a dose sufficient to induce free vomiting, and afterwards, whilst nothing occurs in the state of the patient to contra-indicate its use, in smaller doses, at intervals of an hour or two hours, so as to keep up its nauseating action more or less decidedly, in proportion to the severity of the symptoms, until a palpable impression has been made on the state of the respiration. The proposal made within the last few years, to employ in the treatment of croup, as a substitute for this invaluable appliance, the sulphate of copper, a non-nauseating emetic, and therefore devoid of the very quality which confers on medicines of this class their chief remedial value in the disease, is one not likely to find favour in the eyes of the practical physician. Its *primâ facie* absurdity will justify him in dismissing it without a trial.

Admitting the efficacy of early and free venesection, which, apart from its own remedial tendency, will be of service in promoting the action of the tartar-emetic in acute laryngo-tracheal inflammation affecting the adult, I am yet of opinion that, in the topical abstraction of blood, we possess a measure more generally applicable, and of still greater utility. In croup, I have long restricted my practice to this last mode of depletion. Along with the diminished doses of the antimonial, I exhibit calomel, combining with this, when it is judged expedient to discontinue the other, the compound powder of ipecacuan. Thus guarded and aided, the mercurial is pushed to the extent of inducing its constitutional action, should any degree of stridulous breathing or cough remain : and true exacerbations, if such arise, are met by a recurrence to the use of the nauseant whilst it can be borne.

In all severe cases which have not yielded in some measure to other treatment within the first few hours from the commencement of the attack, I have recourse to counter-irritation along the sides of the larynx and trachea; and I believe no better method of effecting this has yet been devised than the application of the emplastrum cantharidis, succeeded, before complete vesication has taken place, by a warm poultice.

I have made some trials of the inunction over the larynx of belladonna, as an auxiliary to the more powerful relaxants; but, with these at the same time in operation, I have been unable to determine whether it had any share in bringing about a cure, when that was the result. It is, at all events, an expedient which can in no way interfere with the other treatment, and may perhaps have its use.

It has occurred to me that benefit might be derived from the cautious administration of the enema tabaci (other means failing), in cases of extreme urgency in the adult, but, since the idea was formed, no suitable opportunity of carrying it out has presented itself.

There is yet another method of directly attacking the glottidean contraction—a recent, and, in my estimation, a most precious addition to the *armamentarium medicum*, applicable to all forms and stages of laryngo-tracheal inflammation. I refer to the mode of "swabbing" the larynx with a strong solution of the nitrate of silver, lately introduced, or at least brought prominently under the notice of the profession, by Dr. Horace Green of New York. The immediate power which it often very strikingly manifests over affections of this class can scarcely be derived from its astringent or caustic action on the mucous membrane alone; but, whatever its *modus operandi*, the value of this agent will be acknowledged by every one who has fairly tested it. The alacrity with which even very young subjects submit to the application, after their original dread of it has been overcome, is of itself a proof of the efficacy of this remedy. I am by no means satisfied that the *swab* can be so easily introduced into the larynx as Dr. Green and others assert. At least, I suspect I have myself but seldom if ever succeeded in passing it completely within the rima glottidis; but I believe that, if it be firmly pressed against this orifice just when the patient begins to inspire, the tongue being at the same time depressed to the utmost, we shall be enabled to apply the solution sufficiently over the mucous surface to secure its remedial action. From a want of attention to these precautions, and of readiness to seize the favourable moment, especially with children, the operator may, as I think I have more than once witnessed, carry the sponge over the entrance to the respiratory organs, and introduce it into the œsophagus instead.

Moist air, at a temperature of above 70° Fahr., I have not found to answer the expectations I was led to form from it. Since its introduction, by Dr. Golding Bird, as a remedy in diseases of the respiratory organs, I have tried it on many occasions, but have never been able to trace any part of my success in treatment to its agency. Its employment in private practice is at all times difficult and inconvenient, often utterly impossible.

When the advance of the disease towards a fatal issue threatens to outrun our endeavours to unlock the glottidean constriction, time for the fulfilment of this indication may be gained by *admitting air to the lungs through an artificial channel*. Considerable diversity of opinion prevails respecting the most eligible situation for the operation of bronchotomy, and the comparative merits of laryngotomy and tracheotomy—a question into which it is not my intention to enter, further than to state that, as an expedient in all cases of laryngo-tracheal inflammation, I give a decided preference to the last named proceeding, it being more remote than the other from the seat of disease, and

because its performance does not, like this, involve the necessity of dividing, to a greater or less extent, the cartilages of the larynx. I begin the incision into the tube immediately below the cricoid cartilage, and extend it as far down the trachea as is necessary to permit the insertion of a canula of adequate size. The alleged greater difficulty of this operation than that of cutting into the crico-thyroid space ought not, I think, to weigh against its obvious advantages; and if the cricoid cartilage be fixed and drawn forwards by means of a blunt hook applied to its inferior border, whilst an assistant steadily holds asunder the edges of the preliminary incision through the integuments and between the muscles, the last step of the operation will be rendered sufficiently easy of accomplishment in the hands of a surgeon of ordinary dexterity.

The pathological views above adduced will further tend to impress upon the practitioner's mind the expediency of adopting this measure early in the disease, giving additional force to the observation of Louis, that, "as long as bronchotomy is considered an extreme measure *(un dernier ressort)*, it will be always performed too late." The period of the attack at which the indication for its employment will arise must vary in the different forms, as well as in individual instances of the same form, of the malady. I have met with cases in which an attack of croup, preceding and retarding the eruptive stage of some of the exanthemata, continued for four, five, or even six days, without perceptible abatement of the laryngeal symptoms, but in which, notwithstanding, there was no necessity for surgical interference; and I have also seen examples of the same subacute and unyielding condition, similar or even greater in duration in the diphtheritic variety of this affection, where operative procedure was equally uncalled for. On the other hand, circumstances will present themselves under which an hour's delay would be fatal. I therefore believe that the practitioner who follows any general precept in this matter, whether it inculcate a delay to operate of six or of thirty hours, or who accepts any other guidance than that of "the unwritten tact" which is the priceless offspring of experience and attentive observation, will oftener be led astray than directed aright.

In a large majority of instances, I venture to affirm, the failure of medical treatment, without its surgical auxiliary, may be foreseen before the disease has advanced too far to admit of the operation being had recourse to with a prospect of success; and if an unexpected recovery does now and then occur, under the use of what may be called the ordinary curative measures alone, such exceptional cases can obviously have no weight in determining the rule of practice.

Over and above the *indirect* remedial tendency of bronchotomy, I regard the first stage of this proceeding as a remedy proper in laryngo-tracheal inflammation, exerting its beneficial influence in two ways. The dissection of the integuments and muscles from the tube, to the necessary extent, cannot be accomplished without dividing some of

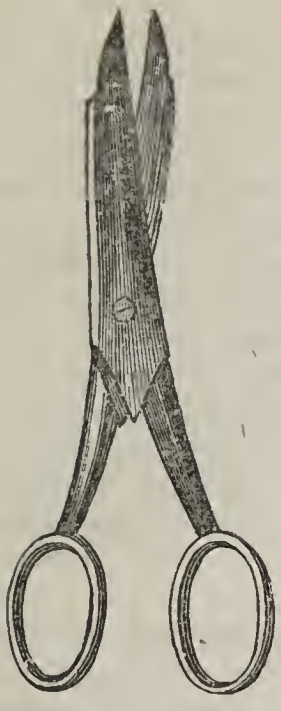
the branches of the thyroid arteries in their course to the interior, and thereby diminishing the supply of blood to the seat of constriction. A condition unfavourable to the persistence of that constriction is thus established, and a very direct local depletion at the same time practised, calculated to lessen inflammatory action. These objects will probably be still more effectually served, if the incision be made to reach from the lower edge of the thyroid cartilage to the isthmus of the thyroid gland, and if the organ be freely denuded of the soft parts covering it to the same extent, especially at the situation of the crico-thyroid membrane. In one case of diphtherite, a marked abatement of stridulous respiration, which the foregoing considerations may explain, almost immediately followed the completion of the preliminary steps of the operation. After reflection, in fact, has inclined me to doubt whether opening the tube itself might not have here been dispensed with. In similar circumstances, I should not again complete this measure until admonished of the necessity of doing so by a recurrence of the dyspnœa.

The value of this operation in laryngo-tracheal inflammations attacking the adult is acknowledged on all hands, but, where infantile affections of the same class are concerned, the case, it need scarcely be said, is widely different. Tracheotomy, as an expedient in every form of croup, is almost universally tabooed in this country, all our leading authorities taking part in the process, with more or less energy. Whether this unconditional rejection of it be merited or justifiable, will form the subject of inquiry in a succeeding communication.—*Association Medical Journal, July* 7 *&* 14, 1854, *pp.* 588, 616.

156.—*Dr. Marshall Hall's Tracheotomy Scissors.*—[At the soirée of the Medico-Chirurgical Society of Nottingham, Dr. Hall thus described the scissors which he uses for opening the trachea, both in epilepsy and in other cases.]

You observe these scissors, (see A.) They meet in a *point*; each blade is filed so as to leave a *notch*. With these the integuments are first to be divided, and the trachea pierced; the blades are then to be gently but firmly opened; into the orifice thus made this cage (see B) is to be inserted, and the operation is complete—complete with scarcely the loss of a drop of blood or of a minute of time. The cage, as you see, admits of compression for introduction, and for removal to be cleaned. It is not tracheo*tomy*, but tracheo*tony*, from τείνω, I stretch, instead of τέμνω, I cut.

With this tracheal opening "epilepsia *laryngea*" is impossible; such epilepsy may be prevented altogether if the case *consists* in *laryngeal* attack exclusively. It will be *abortive* only and issue in other forms of epilepsy if such forms are apt to occur in the absence



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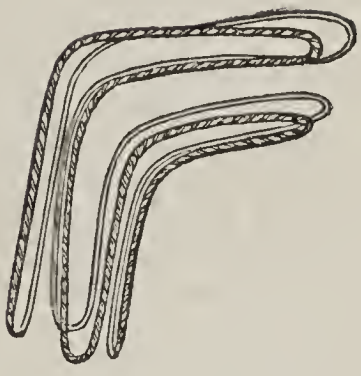

B

of lanyngismus. There is a case in a New York Hospital of a patient who has *thrice* undergone the operation of tracheotomy; thrice the seizures have been superseded by the operation; thrice they have returned on closing the orifice. At the present time the orifice is permanently patent, the edges of the wound being cicatrized, and the patient is no longer the epileptic "wretch" he was.—*Lancet, June* 17, 1854, *p.* 648.

157.—ANEURISM OF THE COMMON FEMORAL ARTERY CURED BY COMPRESSION.

By Dr. Maurice H. Collis, Surgeon to the Meath Hospital.

[The cure of aneurism by compression is now an established practice, so much so, that we have not thought it necessary to make abstracts of the numerous cases which from time to time are published. But the reader will find that in the following case some interesting facts are established.]

In the present instance compression was applied close to the sac, and appears to have acted in a different manner and on a different principle from what has hitherto been claimed for it. According to the highest authorities upon this subject, the artery has always been found pervious at the seat of pressure, when opportunities of post-mortem examination have occurred; and the sac has been found filled with concentric laminæ, which seem to be successive deposits from a current of blood circulating through it; consolidation of its contents *en masse*, as a result of stagnation, is regarded as improbable, and would be

thought dangerous and liable to cause relapse or suppuration. Now, in the case reported below, it will be found that, in consequence of pressure being applied close to the sac, no branches being given off between it and the point of compression, the sac was consolidated with rapidity; and, of necessity, not in concentric laminæ; and the artery was filled up as high as the next collateral branch: these results were obtained by the rapid formation of a coagulum without the occurrence of inflammatory action at the compressed point; nor were they followed by suppuration of the sac or secondary aneurism. This coagulum occupied, as far as we could judge, the entire space in which the current was interrupted, that is, the space between the branches given off above and below the point of pressure. If further observation should prove that this is not an isolated and exceptional case, it guides us to a new principle, which may be applied not only where the aneurism is situated as this was, but with certain limitations to pressure upon the distal side.

The details of the case are as follows:—

Christopher Toole, aged 32, by trade a nailer, a tall, athletic man, of dark complexion, presented himself among the extern patients at the Meath Hospital, on Monday, July 24, 1854, with a pulsating tumour on the upper part of the right thigh. This tumour was $4\frac{1}{4}$ inches long and $5\frac{1}{2}$ wide; the circumference of the limb over the centre of the tumour was $21\frac{1}{4}$ inches, that of the corresponding part of the sound limb being $18\frac{1}{2}$. It occupied the upper part of Scarpa's space; its upper margin was in contact with the depression which marks the position of Poupart's ligament, and it extended downwards along the course of the common and superficial femoral vessel. The pulsation was very strong and diastolic, and the action of the artery above it was so forcible as to lead some persons to conclude that it was considerably dilated; by pressing upon the abdomen firmly we could trace the pulsation in the external iliac for a distance of nearly four inches. The superficial veins of the thigh were remarkably large, knotted, and tortuous; the glands in the groin were somewhat swollen; and upon the outer aspect of the tumour two glands could be felt elongated and flattened, and partially sunk into it; the entire limb was enlarged, slightly œdematous, but of natural temperature and sensibility. There appeared to be some solidification of the tumour on its outer margin: subsequent observation showed this to be at least partially deceptive, and resulting from the varicose condition of the veins on the internal side. Pressure upon the artery in the groin readily checked all pulsation, but without any sensible effect upon the volume of the tumour. No bruit de soufflet was audible in any position, nor was there any fremissement; the whole arterial system was excited, and the man complained greatly of the throbbing; even the momentary pressure of the thumb upon the artery gave him great relief. He stated that his general health was good, and that for the last two years he had been temperate; his occupation rendered stooping necessary, and also con-

stant rotation of the body at the hips, the feet being kept unmoved. The floor of his workshop was uneven, and his right foot had for some weeks rested habitually on a lower level than the left. The tumour made its appearance, as far as he was aware, spontaneously, about six or seven weeks before his application at the hospital: it was then about the size of a nut, and had ever since grown steadily larger.

Tuesday, 25th. After administering purgatives, &c., compression was attempted; various instruments were tried, by none of which could the artery be commanded, even partially, for more than a minute or two. The only point available for pressure was just above the sac, at the spot where the epigastric and circumflex vessels are given off. As the brim of the pelvis is rounded just at this place, all the instruments were displaced by the ordinary respiratory movements, and slipped off the artery; a relay of pupils kept up pressure sometimes by the finger and sometimes with the clamp or leaden weight; but it was partial and irregular, in spite of the greatest vigilance and anxiety on the part of all, including the patient himself. Low diet was strictly enforced, and purgatives of croton oil were occasionally exhibited. Quiet was procured by opiates. Chloroform was administered once, but produced excessive headache. An attempt was made to draw some blood upon the second day, but it was thick and carbonaceous, and would not flow. On Saturday, after upwards of four days' ineffectual attempts at compression, the skin in the groin began to chafe and suppurate round the root of every hair, and it became evident that pressure could not be borne much longer; the aneurism had increased half an inch outwards and downwards, and the pulsation was as violent as before, compared with the general force of the circulation; no attempt at consolidation had taken place, and all parties were inclined to be disheartened.

On Sunday, the 30th, I determined to make another effort to command the vessel completely. Having procured a double clamp tourniquet, which closed by a screw at the hinge, I applied it, placing a small roll of bandage an inch thick under the part. I screwed it home, and found that it controlled the pulsation for a moment, and, like all the rest, slipped off towards the abdomen. By screwing it a little tighter, and drawing it downwards by a tape from the knee, I was enabled at last to get the artery completely controlled. Before finally adjusting it in this position, I drew up the skin, so as to get an unchafed part under the pad. The tourniquet was not disturbed for thirty hours, and at the end of this time, upon slackening it, all pulsation was found to have ceased in the tumour and in the artery as high as it had been traced before, namely, to the spot where the common iliac bifurcates.

About twelve hours after the tourniquet was applied the man felt a stinging pain on the inside of the knee and leg, and a kind of tingling sensation along the outside of the hip and thigh. While under pressure he took a couple of sedative draughts, containing half a drachm of chloroform.

The spot of skin where pressure had been first attempted was beginning to slough in points, but in a few days it became healthy. The tumour became a little smaller in the first few days, although the subsidence of venous congestion and œdema gave it a more prominent appearance. He never had the smallest pain nor single bad symptom after the removal of the clamp, and upon the 12th of August he got up and walked about the ward.

On the 16th he left the hospital, and returned almost immediately to his work, having been in hospital twenty-three days; nor would it have been necessary to keep him so long but for the slough of the integument caused by the first abortive attempt at compression. I saw him on the 6th of October, and found the tumour reduced very considerably in volume; the difference between the circumference of the two limbs was less than one inch.

In the mere details of this case there is little worthy of remark beyond the rapidity and painlessness of the cure, and the fact that it is the first instance on record of the cure of aneurism of the common femoral artery by compression. There are, however, some points of general interest to which I wish to draw attention. These are:—

First. The position of the point of pressure as regards the sac and as regards the collateral branches. The artery was compressed close to the sac; the point of pressure covered the usual origin of the superficial circumflex ilii and epigastric vessels, the latter of which could be felt pulsating before treatment was commenced; hence the nearest collaterals were practically the internal iliac on the one side, and the profunda on the other, and pressure was thus made between the sac and one of the next collateral branches.

Secondly. The fact that under these circumstances the aneurism increased in size, as long as pressure was incomplete, and upon the artery being completely controlled coagulation was rapidly obtained.

Thirdly. The simultaneous blocking up of the artery above the point of pressure, as high as the next collateral branch.

Fourthly. The non-occurrence of secondary aneurism, or of suppuration of the sac.

Fifthly. The bearing of this case upon the question of pressure at the distal side.

The immediate proximity of the point of pressure to the sac appeared to be a dangerous though unavoidable complication; it was, however, not only unavoidable, but essential to the cure. As but one point existed where pressure could be made, it was necessary that the cure should be rapid, or the skin would have failed us. Ignorant of the principle which appears to guide the cure in pressure close to the sac, we at first were satisfied in endeavouring to cut off the impulse of the heart without completely shutting off the current. As long as we

did so the sac continued to increase in size, and to pulsate with as great a vehemence as ever. No sooner was the current completely intercepted from the sac by pressure between it and the nearest collateral, than coagulation of its contents took place. No current through the sac was now practicable, and the consolidation was, as we may suppose, not only rapid but complete. In compression at a distance from the sac, as in ligature similarly situated, blood is deposited layer by layer, until not only the sac but the artery at the injured part is filled up. No such process could have occurred in this case, for no branch existed between the sac and the point compressed, and therefore no current could have made its way through it. The effect of thus converting it into a *cul de sac* was the coagulation *en masse* of its contents. The same result took place in the *cul de sac* above the tourniquet, the artery becoming obliterated in a similar rapid manner. To this latter circumstance is probably to be attributed the non-occurrence of relapse or of suppuration in the sac.

This case seems to suggest the possibility of curing aneurism by distal pressure, under favourable circumstances. If we can effect the consolidation of an aneurism by converting it into a *cul de sac*, there is reason to believe that with due regard to preparatory treatment this result might in some cases be obtained by choosing a spot between the sac and the distal collateral branch as the seat of pressure. We see in this case that not only the sac was filled up, but the artery also, which was exposed to the pulsatile wave of blood. When pressure is made on the distal side of an aneurism, we observe an increase of impulse for a few moments. If the compression is *complete, and firmly kept up*, this momentary irritation subsides, and the aneurism pulsates with perhaps less force than before. This principle of converting the aneurism into a *cul de sac* appears to act occasionally in compression at a distance. Dr. Carte, who has had great opportunities of observing the various phenomena which arise during the cure of aneurism, has stated it to me as his conviction that many, if not all, of the rapid cures are effected by a loose clot blocking up the distal portion of the artery. Certainly we can scarcely conceive it possible that a cure which occupies seven, ten, or even thirty or forty hours, could be effected by the slow process of a deposit, layer by layer, until the sac is filled. We see, also, that a similar result has been obtained purposely by manipulation of the sac, a process which is too dangerous to be other than exceptional in application. From all these circumstances, therefore, I think we may infer the probability of distal pressure being occasionally useful; it is at least worth a trial, where the position of the sac prevents our using the ordinary method; and if we can get a point for compression between the sac and the nearest collateral branch, I think the result of the case which I have now put upon record will give us encouragement, although indirect, to hope for success.—*Dublin Quarterly Journal of Medical Science, Nov.* 1854, *p.* 315.

158.—ON THE USE OF TEREBINTHINATED VAPOUR BATHS IN RHEUMATISM, GOUT, STIFF JOINTS, &c.

By Dr. Antonin Chevandier, of Die (Drôme).

Turpentine, which is probably the most active agent in the aromatic vapour baths, which form the subject of this memoir, has been employed both internally and externally,—in frictions and local fumigations. The other resinous principles which enter with it into the dry vapour in which we immerse our patients have been acknowledged to be worthy of the reputation our predecessors had attached to them.

It is therefore not with a new remedy I am anxious to enrich the materia medica; it is a new mode of administration I wish to bring before the profession, namely, the exhibition of resinous vapour in the form of bath, or rather of general fumigation.

The following is, in a few words, the crude fact which attracted my attention:—

As I have stated in a former publication, the peasants of our mountains have long been accustomed to meet around the furnaces in which black pitch is distilled. It was some moments after the chips of pine had been arranged at the bottom of the furnace, previously heated for forty-eight hours, when the temperature is sufficient to melt the resin solidified in the air, that they descended into this *infernal* medium. They took the precaution of enveloping themselves in thick woollen blankets, as a protection against the excessive heat. At the end of ten, twelve, fifteen or even twenty minutes, they came out of this bath deluged in perspiration, lay down subsequently in badly closed huts, and returned to their homes delivered in a few days from pains of very long standing, or from very serious articular rigidities.

These immersions, of which I wished to be a witness, took place each year, during about two months, at a height of upwards of 6500 feet above the level of the sea, in a climate where the snow is absent only for a few days.

Patients courageous enough to employ this method have assured me that they always found it agree with them. When positive and numerous facts caused me to reflect on the happy application which might be made of this general fumigation to a large number of diseases, I perceived that it was necessary to remove the danger of such unfavourable external circumstances, and to render the administration of the baths more easy. I lost no time in recommending the provisional construction in the village itself of a furnace, similarly circumstanced to that in the mountain. It is a little more than six and a half feet in depth, three and a quarter at the opening, and six and a half in its mean diameter; it is oviform, and has at the bottom a very narrow tube through which the melted resin flows into a reservoir placed externally. Chips of the same wood were used in feeding it in my experiments: thus preserving all the elements which appeared

to me indispensable, and removing those which could be only dangerous. I devoted two months to the accurate observation of the physiological and therapeutical effects of baths of terebinthinated vapour, at a high temperature.

The patients who had taken several baths on the mountain descended the first, encouraged those who had not done so, and by their easy resistance of heat justified me in establishing a mean temperature of 70° R. (189°·6 F.), much lower than that which some had been subjected to on the mountain.

It will at first view be thought surprising that a man can remain without danger in the midst of so elevated a temperature, saturated with exciting aromatic vapours disengaged from resin in a state of fusion. It should be observed that the patients seated round the furnace, protected by their blankets from the heat radiating from the walls to which they turn their backs, have their heads in the centre, where a current of cold air rushes in. The thermometer, placed at the foot of this descending column, marks even there 55° R. (155°.75 F.). Thus situated, some patients have remained for more than half an hour without experiencing any serious inconvenience. Violent excitement of the circulation, some difficulty of breathing, stinging heat of the skin, or commencing determination to the head, induced them to withdraw.

In order to test in my own person the physiological effects of the bath of terebinthinated vapour, but above all with the view of ascertaining the dangers to which patients might be exposed during their immersion, I was anxious to descend into the furnace, having provided myself with a spirit thermometer to examine the temperature of the furnace in its several points, and sheltered under an immense blanket, which descended from the head over the shoulders and down to the feet, under which I almost entirely disappeared, I squatted down on the chips from which the bubbling resin was escaping: I wore no other clothes than a large pair of pantaloons and cloth waistcoat: the thermometer placed behind my back, and consequently exposed to the heat radiating from the walls of the furnace, indicated at the end of ten minutes 82° R. (216°·5 F.), and remained at that point as long as the bath lasted; when held between my knees it fell to 68° R. (185° F.), and even to 60° R. (167° F.), at the foot of the descending column of cold air to which my head was exposed. On entering the furnace I felt almost suffocated so long as I remained standing, but once seated on a wooden bench arranged for that purpose, I was no longer uncomfortable. It was exactly 7 o'clock. My pulse, at the period of immersion, beat 65 in the minute. For ten minutes I conversed with my neighbour, asking him how he felt, and telling him that I was not at all incommoded. However, I took the precaution of holding a handkerchief steeped in cold water on my lips and forehead to cool the air I breathed.

The resinous vapours, which were disengaged in the form of a light

transparent smoke, far from causing suffocation or disagreeable burning in the throat, gave rise, on the contrary, to a pleasant and soothing sensation; an almost imperceptible tingling was produced in the skin, which became the principal seat of congestion; it was very hot, very red, and was covered with perspiration.. The arterial circulation was accelerated, the pulse was developed, hard and full, and beat 88 in the minute; the pulsations of the heart were not troublesome; the head was free, burning; the face was very animated; there was no dulness nor nausea; even the conjunctiva was not irritated. I was streaming with perspiration, and yet had not experienced the weariness which precedes or accompanies that produced by ordinary means. At the end of twenty-five minutes, the respiration becoming more rapid, the determination to the head more decided, and the internal heat insupportable, I came out of the furnace; I ran to my room, which was only a few steps distant; my step was firm: I threw myself into a well-warmed bed, keeping on my clothes and my burning blanket, which was a little injured. The pulse soon rose to 95; the determination to the head became more decided; the beating of the heart caused the chest to heave violently. After some minutes all these symptoms abated; the pulse fell to 80; the palpitations ceased; perspiration set in so profusely as to penetrate the mattrass. I had taken an hour's repose, when, after having had myself wiped with flannel, I got up, put on warm clothes, and returned to my patients.

I had an extraordinary suppleness in my limbs, and experienced surprising agility; I did not feel weakened; I ate with more appetite than usual; at night my sleep was disturbed by dreams, in which hyper-excitement of the genital organs was not idle. The urine was highly coloured, and had a decided violet odour, but presented no sediment. I have since several times used the bath, which has never fatigued me.

160 patients descended into the furnace in the space of two months: every age, from 16 to 75; every species of temperament, from the rachitic to the apoplectic, have been subjected to the action of the resinous vapours, at the average temperature of 65° R. (178°·25 F.); two persons only were obliged to leave the furnace: one an old man of 64, overcome by the heat at the margin of the lower part, was seized with a fainting fit, which soon went off in the open air; the other, after an immersion of sixteen minutes, having returned by himself to bed, laboured for some minutes under a gentle delirium, with tendency to sleep. A few cold applications quickly dispersed these symptoms. These two patients have subsequently had recourse to the baths without inconvenience. In others I have observed, in a more or less intense degree, all the physiological effects which were produced in myself, and which I have above described. A great number suffered from ardor urinæ; sleep is in general interrupted by starting, and disturbed by erotic dreams. In several the excessive perspirations were followed by transient miliary eruption, which have in no instance pro-

duced an amount of weakness proportioned to the loss the patients suffered by the skin.

Twelve baths, taken in two series, with an interval of eight days' interruption, constituted the treatment of the season.

I say nothing as yet of the therapeutic effects which numerous observations, collected daily and carefully noted, will soon bring before the reader.

Without waiting for the voice of experience, which concedes a great value to this therapeutic means, what are we to think, *à priori*, of the possible advantages of its application to medicine? Its physiological effects, the general hyper-excitement produced by baths of terebinthinated vapour, warrant us in affirming that their employment will be almost co-extensive with excitant medicine itself; and that, moreover, the special action of resinous bodies on the mucous membranes causes this method to be doubly indicated in chronic diseases of the skin, in chronic catarrhal affections of the chest or bladder, and, above all, in chronic rheumatism, gout, gonorrhœa of long standing, amenorrhæa, &c.

My anticipations are justified by the ordinary success of rational medicine in the great class of diseases which Hufeland calls *rheumatosis*,—in all cases of disease requiring the employment of resinous bodies, the terebinthaceæ, tar, benzoin, &c. In fact, the vapours which I have called terebinthinated would deserve a name of a more extensive application, for it is not only turpentine, but also all the volatile principles of the resins, which are resolved into vapour.

The tree from which black pitch is extracted occupies the elevated table lands of some of our mountains. It pretty closely resembles the *Pinus pinea*, from which it differs in the elevated situations it inhabits; it is also distinguished from the latter species by the comparative smallness of its fruit. This pine is very rich in resin. In the month of May a long piece of the bark is removed by the stroke of a hatchet, and the wood is thus left exposed. The resin which exudes hardens in the air, and is found at the end of a fortnight in a layer of greater or less thickness, which is removed by a second stroke with the portion of wood it covers, and this constitutes the chip. The solidified resin is met with in the form of yellowish-white opaque masses, of the consistence of wax, the taste of which is at first sweet and agreeable, but afterwards acid and bitter. It is the turpentine derived from a pine from which the essential oil has not been previously extracted.—*Dublin Journal of Medical Science, Nov.* 1854, *p.* 476.

159.—ON CANCEROUS DISEASE OF THE CŒCUM.

By Dr. R. B. Todd, F.R.S., Physician of King's College Hospital.

[In this case Dr. Todd describes the pallor of the patient as being very remarkable, attracting the notice of most people who entered the ward.]

Concomitant with this anæmic state, there was a very manifest fulness in the right iliac region, accompanied by pain and tenderness there. A resistance was experienced on pressure being made, and a sensation was communicated to the hand, as if a firm elastic tumour were compressed. On comparing the two regions on opposite sides, one presented the natural yielding feel, while the other felt firm and resisting, with an indistinct feeling of fluctuation. On this latter side (the right) there was decided dulness upon percussion, and deep percussion gave no indication of the presence of intestines beneath; occasionally, however, a slight sonoriety could be elicited.

When the problem before us is, to diagnose the nature and connexions of an abdominal tumour, we must notice the sounds elicited upon superficial and deep percussion. By the former term I mean percussion made with only very slight pressure on the abdomen; by the latter term I would signify percussion made simultaneously with deep firm pressure on the surface. We have a good illustration of the importance of the use of both kinds of percussion in physical examination of the abdomen in cases of enlarged liver. In such cases, when the liver is thin and soft, superficial percussion alone would often lead you to overlook the enlarged gland, by eliciting a clear sound from subjacent intestines. In other instances, the very reverse takes place; a slight superficial tap will give you the dull hepatic sound, but a deeper percussion would elicit the intestinal sound. In the present case the dulness was equally decided, both upon superficial and deep percussion.

Pain, referred to the right iliac region, and extending to the loin, was a prominent symptom of the case. The patient complained of sharp shooting pains in the region of the tumour; and there was also considerable tenderness on pressure, which varied considerably, probably according as the bowels were full or empty.

The ordinary functions of the body were properly carried on, the circulation appeared healthy, there were no symptoms of dyspepsia, the bowels acted freely, the kidneys secreted as in health, and the usual quantity of urine was secreted. The urine was frequently subjected both to microscopical and chemical examination, but we were unable to discover anything abnormal; the specific gravity varied from 1010 to 1015, and in every respect the secretion appeared healthy.

In endeavouring to arrive at a diagnosis in this case, our attention was directed to determine first the cause of the anæmia, and, secondly, the cause of the pain. Now, as anæmia in women is so often associated with something astray in the catamenial function, we made particular inquiries respecting it.

An anæmic state may (as you know) be produced either by a too profuse flow, or even by the opposite state—a stoppage of the catamenia. The condition which is termed chlorosis, is almost always dependent upon a deficient secretion or total suspension or non-appearance of the catamenial flow. The catamenial function may not have

been developed, or having commenced it may have stopped, in either of which cases an anæmic condition might result. Where there is menorrhagia, the constant or repeated drain exhausts the colouring matter of the blood. When no catamenial discharge takes place, or when it is very defective, the nutrient changes of the blood are impaired, and the hæmatine is not formed of sufficient quantity, or of proper quality, The result of our inquiries was, that there was no fault connected with the catamenial function adequate to explain the anæmic condition.

It appears also that there had been no loss of blood from any other source, none from the rectum or the bladder, or the kidneys, or the nose, nor from any internal organ.

Neither was there any evidence of exposure to the influence of the marsh poison, which often gives a pallid sallow hue, similar to, though seldom to such a degree as was exhibited by this woman.

These causes failing to explain the peculiar anæmic condition, I was led to suspect the existence of malignant or cancerous disease; nor was this idea contradicted by the patient's age, which was about 30; for at that period malignant disease is by no means uncommon, especially in women.

The presence of a tumour in the right iliac region was of course confirmatory of this suspicion, and seemed to indicate that the cancer was seated there; but to determine its precise seat, and the exact relations of the tumour, demanded further investigation, which was necessary for the solution of the next question, namely, as to the cause of the pain.

What, then, gave rise to the pain which this woman experienced in the right iliac region? It was a severe lancinating pain, and occurred at all times, and not only when the part was pressed upon. Her sleep was very much interrupted by it. It was increased but not very materially, by pressure. It did not seem to be aggravated by the action of purgatives. Soon after she took castor-oil daily for a few days, but with rather an alleviation than an increase of the pain.

A very decided swelling existed in the right iliac region. It was not a prominent tumour; but, as the patient lay upon her back, you saw a decided convex swelling of the right iliac region, the corresponding position on the left side being concave and rather collapsed. Pressing upon this convex swelling, you experienced a decided resistance. This resistance began about a finger's breadth internal to the anterior superior spinous process of the ilium, and extended upwards for about an inch and a-half or two inches. Over all this resisting surface it was that we found the dulness on percussion to which I have already referred. Above and to the inside of this surface the percussion sound was clear.

Is it possible that this tumour could have been caused by enlargement of any of the great internal organs? The spleen and left kidney were excluded, by the tumour existing on the right side. We had no

difficulty, also, in excluding the liver, as that organ, for the first few weeks after the patient's admission was clearly not increased in size.

Might it not have been an enlargement downwards and forwards of the left kidney? An enlarged kidney might certainly extend to the iliac region, but it would also show itself elsewhere—you would find it bulging in the loin, causing a fulness and a dulness in that region; but we found no such fulness here, and, on making pressure, no resistance was encountered, such as you experience from enlarged kidney. Nor could we trace the tumour upwards into any mass resembling an enlarged kidney; on the contrary, the swelling ceased abruptly above the iliac region, and the dull sound gave place to an intestinal sound. Add to all this the fact that repeated examination showed the urine to be quite healthy, and, I think, you will admit we were justified in excluding enlarged kidney as forming the tumour.

There were, however, other and more likely causes of this swelling. Might it not have been a fæcal accumulation in the cœcum? The tumour was scarcely large enough for this; and it was too hard for it and too resisting, and, also, much too painful. Still, I thought it desirable to test it, by giving repeated doses of castor oil. This was done soon after her admission, but although feculent matter passed in large quantity, it was not so abundant as might have been expected from fæcal accumulation; and, what is more important, neither the size, nor the resistance, nor the painfulness of the tumour ever diminished by the free action of the purgative.

There is a thickening of the walls of the cœcum of a braign kind, resulting from chronic inflammation, of which I have seen cases in both men and women. Could the tumour be caused by this? The extreme pallor and the constitutional sympathy were greatly against this, for in the cases to which I allude there is little or no constitutional disturbance, and then only when fæces accumulate. Moreover, in all these cases the walls of the cœcum can be felt, and the gut can be made to roll beneath your fingers.

Sometimes the cœcum is the seat of an inflammation which involves the areolar tissue in which it is lodged, and the peritoneum around it; and in some cases it begins at the vermiform process (typhlo-enteritis). Could we refer our case to this? I decided in the negative, because we had no acute symptoms, no rigors, no fever, none of that exquisite tenderness which accompanies that inflammation; because, likewise, purgatives did no harm, which they inevitably must have done had there been inflammation of the cœcum. Moreover, the continuance of the symptoms for three years, and the extreme pallor, could not have been explained by this view of the case.

Thus, then, I fell back upon the idea that the swelling of the iliac region was due to the presence of malignant disease there. This view was most consonant with the extremely chronic nature of the complaint, and offered the only explanation of the peculiar anæmic condition of the patient. But now we had to inquire—What was this

cancer? Was it a tumour external to the bowel, and compressing it, or pushing it inwards? Or was it a deposition of cancer in the walls of the bowel, causing great thickening, and encroaching more or less on its cavity? I felt it impossible to decide between these two questions, although, in some degree, I leaned to the opinion that the tumour was external to the bowel. The marked dulness on percussion, with rare exception, the fixedness and hardness of the tumour, and the absence of all signs of intestinal irritation, and the tolerance of purgatives, seemed to me to favour this view.

Our patient remained for a long time in the hospital. From the 12th of December till the 10th of April, no very striking change took place; she became weaker and thinner—paler she could not be; however, at the latter date, a new and most interesting symptom showed itself, tending to confirm the diagnosis of malignant disease. This symptom was an œdematous condition of the whole of the left upper extremity. The veins of the upper part of the arm were much distended, and all the tributaries of the subclavian vein appeared swollen, thickened and hard. The extreme pallor and transparency of the skin served to display them in great perfection. The obstruction was evidently confined to the subclavian vein, for the circulation in the veins of the neck seemed quite free. This also showed that the innominata was untouched, and that the destruction did not extend beyond the subclavian. The appearance of œdema of the upper extremity under these circumstances affords a beautiful illustration of the mechanism of dropsy, and shows how it may result simply from the percolation of the serum of the blood through the coats of the vessels, in consequence of the existence of an obstruction to the return of blood by the plugging up of one of the large veins. That there was obstruction was quite certain; there could be no doubt from the enlargement of the tributary veins; but we had to ascertain what was likely to be the precise nature of the obstruction.

The obstruction depended either upon the passage of cancerous matter into the veins, and the coagulation of the fibrin of the blood around it forming a plug, or it resulted from the introduction of some other morbid matter into the circulation, and the occurrence of local phlebitis; which of these conditions was present it was impossible to decide. The introduction of cancer germs or cells into the circulation is now a well-established fact, and, no doubt, explains the transfer of cancer from one part of the body to another, or even far distant from its primary seat.

On the 15th, the right leg became œdematous, and the veins enlarged, and the œdema of the arm subsided considerably, in consequence, no doubt, of a collateral circulation having been established. On the 29th, chest symptoms manifested themselves in the occurrence of dyspnœa, and dulness over both sides of the chest behind; and, at the same time, there was an absence of vocal vibration, indicating that effusion had occurred into the pleural cavity. This effusion had taken

place, most probably, in consequence of the very watery condition to which the blood was reduced, a state which, as you know, favours the escape of serum from the vessels, and the effusion of fluid into any of the great serous cavities.

At this time another remarkable symptom showed itself; this was the occurrence of a distinct pericardial rubbing sound, heard all over the heart, but most distinct at its base. This is a point of great interest, occurring, as it did, in such a case as the present, where the blood had become so attenuated; for it shows that fibrinous deposits, sufficient to create friction sound, may take place in very low states of the system, and where there exists a very watery condition of blood—a warning to those persons who believe that the mere deposition of fibrin is evidence of an inflammatory state, and that this deposition is to be averted by depletion, *i.e.*, by impoverishing the blood. The patient did not survive the appearance of these symptoms above twenty-four hours.

I should have noticed before, that, in the progress of the case, the liver gradually increased in size, and extended downwards towards the swelling in the iliac region, so that at last the latter seemed to be continuous with the liver.

At the *post-mortem* examination, it was found that, with the exception of the liver, which was much larger than natural, and extremely fatty, none of the solid viscera were increased in size. The spleen was certainly not enlarged, but was paler than usual, and its trabecular tissue appeared well developed. Upon microscopical examination, the spleen was found to contain a great number of white corpuscles.

The left subclavian vein was thickened throughout its whole course, and for about three-quarters of an inch from the junction with the left internal jugular it was plugged up. On following the vein down the arm, it was observed, that the axillary and one of the venæ comites of the brachial artery for half their length was also impervious, the other of these veins being pervious, and probably affording one, at least, of the channels for the collateral articulation, which was established soon after the obstruction had occurred. The chief point in the examination was, to determine the nature of the tumour in the right iliac region. On laying open the abdomen, the intestines appeared bleached, but otherwise natural, excepting on the right iliac fossa, where there lay upon the iliac muscle a mass connected with the intestines. This, on being opened, looked like an abscess communicating with the intestines. The wall was thick and fibrous, and a distinct communication was traced with the ilium below and the ascending colon above, which became continuous with each other through the cavity of the abscess. As we were unable to discover the cœcum, and the tumour occupied its position, and preserved its relations, the conclusion was forced upon us that it was, in fact, the cœcum itself in a diseased state. The interior of the cavity was very

rough, its surface jagged, with large pieces of flocculent, sloughy matter, slightly adherent. The whole mass was about the size of a large fist, and lay upon the iliacus muscle, which appeared soft and soddened, but otherwise had undergone no change. The liver adhered to this mass above, and the portion in contact, when removed, exhibited an incipient slough. Beneath the tumour there were many enlarged glands, which, as well as the thickened walls of the tumour, contained numerous cells, similar to those met with in hard cancer. They varied much in size and form, some being oval or circular, others elongated or fusiform; the cells were granular, and a distinct nucleus could be found in almost all of them. No doubt this disease was cancerous in its nature. The microscopical examination affords good evidence of this, which is confirmed by the duration of the disease, the severe lancinating pains, and the cachectic condition of the patient. When the woman came in, the walls were probably in the condition called close cancer; but, after a time, a sloughing process became established, which produced great prostration, and ultimately caused the patient's death.

Some of the cancerous matter had probably been taken up by the veins, and deposited in the adjacent femoral vein, which had become, in consequence, plugged up, just as had previously happened in the case of the subclavian vein.

It is a curious point to inquire how the absence of symptoms of intestinal disturbance is to be explained. It seems to me to have been due to the perfect freedom of transit for the intestinal contents through the cavity of the cœcum. The cœcum was considerably reduced in size, and the caput coli was almost obliterated, so that the channel between the ilio-cœcal valve, of which one lip still remained, and the ascending colon, was exceedingly short; thus the action of the ilium was sufficient to propel the contents of that bowel into the colon, without any contraction on the cœcum itself being necessary; and since the thickened state of the walls of the cavity opposed undue distension, the contents of the bowel were prevented from accumulating in this situation. This is an exceedingly rare case of disease; indeed, I only recollect having seen one instance of it before, which occurred many years ago, in an old man who was a patient in the hospital in Sutherland ward, under my care. Unlike the present case, this man died of obstruction. I regret that I have been unable to lay my hands on the notes of the case, as the comparison between the two would be interesting.

Upon looking into various authorities, I scarcely find any reference to cancer affecting the cœcum, although many instances are recorded where the colon was the seat of malignant disease. Cancer of the colon occurs next in frequency to cancer of the rectum; it was for the relief of the former condition that the new operation of making an artificial anus in the loins was suggested by Amussat. The cœcum, then, so far as I know, seems seldom to be the seat of malignant disease, which

appears the more remarkable when we keep in view the analogy in function between this portion of the intestine and the stomach.

The treatment to which our patient was subjected was entirely palliative and supporting, with the exception of a little purging with castor oil at first. Narcotics and tonics were chiefly employed. The former were used both internally and locally. Of the local remedies, the patient attributed the greatest relief to the belladonna.—*Medical Times and Gazette, Oct.* 28, 1854, *p.* 433.

160.—ON INFLAMMATION.

By Dr. Addison, F.R.S., Maidstone.

In epidemical diseases, inflammation is usually present in some part of the body. In eruptive fevers, it is visible on the skin; and in continued fever, dysentery, influenza, &c., there is generally evidence of some degree of inflammation.

Inflammation arises in joints from local injury, a sprain, or contusion. It may arise in the same places from gout. Inflammation follows from injuries inflicted on the skin, hot water, a blister, or mustard plaster. It appears in the same part in measles, scarlet fever, and erysipelas. Pustules arise in the skin from local irritants; also, in the same part, from the poison of small-pox. What are the relations of these varietes of inflammation? and what is the natural history of the process?

In the following sketch of inflammation, conclusions derived from original investigations are stated affirmatively. The facts and experiments upon which the conclusions are grounded have been published at different periods; a short account of them will here be given, and full references stated, for those readers who may require their details at greater length.

1. *Inflammation is a preliminary of repair.* Man placed in the world, is liable to wounds, contusions, and fractures; and properties inherent in the animal economy have been provided for their reparation. Broken bones, torn tendons, and other parts separated by wounds and lacerations, reunite and heal.

In these and all other instances of injury or irritation from injurious agents, a degree of inflammation arises; the blood-vessels of the part are more than usually injected with blood, and there is some effusion or swelling, with heat and pain. The simplest example of inflammation follows the short application of a mustard plaster. The part becomes red, hot, and painful; but effusion is scarcely to be noticed. Upon the application of a common blister, appearances are somewhat different: there is a pain and effusion, causing the cuticle to rise, but the redness is less. When an ankle or wrist has been sprained, inflammation arises; there is pain, heat, and swelling; but, as the inflammation is seated internally, in parts around the joint,

redness cannot be seen. In fractured bones, ruptured tendons, and lacerations of all kinds, phenomena of inflammation occur. Lastly, in all accidents, the pain immediately following denotes the injury inflicted upon the part: but that which continues, or arises afterwards with heat and swelling, is a sign of inflammation. It is admitted by all surgical writers, that some degree of inflammation is present in all examples of repair of serious injury: and the proposition, that inflammation is a preliminary of repair of injury to the solid textures of the body, may be considered as established.

II. *Inflammation alters the structure of blood-vessels, permits effusion of lymph, and allows the blood itself an outlet into new vessels sustaining new forms of growth.* In natural or original growth, that, for example, of a bone, tendon, blood-vessel, or any other fibrous texture, preliminary stages are observed. The part at first is extremely soft, then firmer, and then fibrous, tendinous, or osseous. If any animal tissue be observed at a very early stage of growth, through a microscope, it is found composed of cells loosely cohering. The blood-vessels have the same character; they are extremely tender, and cannot be handled without rupture. As growth advances, the cells are found cohering more firmly, forming a species of cellular texture. At still more advanced periods, this cellular tissue is replaced by one fibrous, tendinous, and elastic. Analogously, it has been found, by examination at various periods after the accident, that fractured bones, ruptured tendons, and lacerated wounds, do not unite end to end at once; but that, in all such cases, union is brought about by a preliminary soft growth, which follows the course of original growth: and much evidence has been accumulated by microscopical observers, to the effect that injured textures are disposed or prepared for new growth by inflammation. The summary of the evidence upon this point may be expressed as follows.

Injuries and accidents after birth must happen to parts which are advanced in, or have completed, natural growth. A new growth is demanded for repair which requires new blood-vessels. And new blood-vessels cannot arise in parts complete in growth, without a previous change in their forms and qualities. It is a necessary preliminary of repair, that established blood-vessels assume the disposition and properties favourable to the offset of new vessels; for, without these, new growths cannot be maintained. And it is unquestionably the tendency and effect of inflammation to bring parts around an injury to the condition of an anterior form of growth. Blood-vessels and connective tissue recede, until their properties and structure are coincident with those of early growth; whereupon opportunity is afforded for new vessels and new cell-structure, replete with the energies of growth, to arise.

Case 1.—*Purulent Ophthalmia.*—The eyelids were swollen and closed. Upon separating them, a thick white matter (pus) escaped. The cornea was clear and bright, but surrounded by and almost

buried in a red, highly vascular texture, composed of granulations, having a fleshy appearance. A small portion of this was snipped off; and, on submitting it to microscopical examination, the walls or coats of the blood-vessels were found quite altered in structure, greatly thickened, and composed chiefly of colourless cells.

Case 2.—A man died of consumption and pleurisy. On opening the chest, the pleura was found covered with a clear gelatinous matter, traversed by wavy bands of fibres and new blood-vessels. The size, number, and arrangement of these vessels, bore no resemblance to those of the normal texture. In one place, fifteen large vessels were noted, running, within a very short distance of each other, a parallel course for an inch—a thing never seen in the healthy structure. With the microscope, multitudes of cells were seen in the walls of the vessels, and the smaller branches appeared no more than simple channels in the gelatinous material.

Inflammation, then, loosens the coherence of existing blood-vessels, cells appearing in their walls; upon which, the colourless elements or lymph of blood first, and afterwards the blood itself, finds outlets into new channels, organising and sustaining new textures. These ends accomplished, if the process be connected with repair, inflammatory action ceases naturally, just as original growth ceases. And from this point, from the newly formed texture (the granulation texture), as a basis, a series of transformations in the natural order arise for cure,—fibrous, tendinous, or osseous, respectively, as may be required for the restoration of the injured structure.

That these changes of form, structure, and properties of blood-vessels—this yielding of established texture to new organisation and retrograde order of growth—does violence to the parts themselves, and to the system generally, seems proved by the pain, heat, feverishness, and excitement, which are attendants of the process. But, when for repair no further yielding is demanded, inflammation ceases, and symptoms decline: and subsequent transformations taking the course of natural growth, all remaining signs of the adverse or reverse changes incidental to the preliminary or inflammatory period disappear, superfluous elements being absorbed or removed.

III. *There are analogies between the elements of some of the fixed organs of the body and those of blood: and inflammation is preliminary of repair of injury inflicted on the blood.* The liver is composed of organised cells, and the fluid peculiar to them is the bile. Blood is composed of organised cells, and the fluid peculiar to them, that in which they swim, is the lymph or liquor sanguinis. The cells of the liver are fixed, and constitute a great organ of the body. The cells of blood are in circulation. But this physical or mechanical difference does not vary or diminish the vital properties of the elements, either of the liver or the blood. And the one is not more liable to injury than the other. The blood itself, therefore, may be injured. In accidents and wounds, injury is inflicted on the solid textures of the body;

but the properties by which inflammation is established and carried on are in the blood. Blood-vessels extend throughout the whole body, therefore inflammation and its consequences may arise in any part of it. The common expressions—impure, deteriorated, contaminated, vitiated, impoverished, and poisoned—as applied to blood, include the idea of injury sustained by it, either wholly or in some of its parts. Blood is injured by the inhalation of chloroform, by improper substances taken into the stomach, and by noxious effluvia inhaled by the lungs, impure air, and epidemic miasms. It is injured by poisonous matter, absorbed by the abraded surface of a wound, and by suppression of the natural excretions. What are the phenomena of cure in such cases? That they are various and often complicated there can be no doubt. Blood is so intimately connected with all the secreting organs and outlets of the body, that it is often freed from injurious materials by their means. There is abundant evidence establishing this mode of relief or cure by increased exhalation and secretion. But leaving for the present this part of the subject, it remains to show that inflammation is a preliminary of repair of injury to the blood.

A paroxysm of *gout* is preceded by signs of disturbed health, which arise from the circulation of blood vitiated or injured by incongruous material mingled with it. The paroxysm consists of inflammation, usually in some joint, making its onset with great vehemence. By this, the blood-vessels are disposed to allow the fluid elements of the circulation a passage outwardly, and the outward matter leaves the blood and is deposited in the inflamed part. In *small-pox* a poison is introduced into the blood, which multiplies itself, causing injury. What is the consequence? Inflammation arises at various points upon the skin. The inflamed vessels lose their coherence, permitting a discharge of the poisonous matter. And when this has been thrown out from the circulation, inflammation and illness subside together. Poisonous material, from various sources, sometimes accidently gains access to the blood, through an abrasion in the skin. Whereupon, fever sets in, and there is inflammation not only in the wound, but in one or more distant parts of the body. The inflamed vessels furnish the required outlet to noxious matter; for, with the formation of abscess, and discharge of its contents, the symptoms of illness disappear. "Let us ask," says Sydenham, "what is the nature of plague? Is it aught else than a complication of symptoms, which nature puts in play, in order that through natural eliminations either in the way of abscesses or by the help of some other form of eruption, she may expel from the body those infectious particles that we have taken in along with the air that we breathe? And what is gout? It is a provision of nature to purify the blood of old men, and to purge the deep parts of the body. Such, at least, is the language of Hippocrates."

Blood, then, is injured by infectious and gouty particles; and inflammation, eruption, pustules and abscess are preliminaries or conditions of its repair or cure.

IV. *Inflammation is destructive to existing forms. It alters the function and uses of the parts in which it is seated. And yet it is beneficial, as establishing new growth necessary for the repair of solid textures; also as forming outlets, from the circulation, for injurious matter mingled with the blood.* Let us say a few words upon the two-fold aspect of inflammation as preliminary to the repair of injury. It is, on the one hand, clearly prejudicial to the vessels and textures in which it is seated, inasmuch as it renders them exceedingly soft and tender; it takes away their natural properties and uses; and gives outlet to the blood, which flows in new channels. On the other hand, the previous injury has been sustained, and these yielding, changes in blood-vessels are necessary and beneficial. Because, 1. Repair of injury to the solid textures requires new growth, new growth requires new blood-vessels, and new blood-vessels cannot appear except by change of form and properties in established vessels; and 2nd. Unhealthy or incongruous matter circulating in the blood, if not thrown out by a secreting outlet, requires a yielding of established vessels for its elimination.

V. *There are two stages of inflammation, each of which is sufficient for repair.* In a sprained joint the parts have been severely stretched or twisted. Inflammation and swelling arise; that is to say, there is hyperæmia and effusion of lymph. The effusion forms the proof that the tone of the inflamed vessels has so far yielded, as to afford to the fluid elements of blood an outlet through their walls. But as, in this example, there is no rupture of large tendons, ligaments, or bones, so there is no display of new growth demanded for repair. The stages and influence of inflammation are therefore limited. The coherence of the inflamed vessels yields only to the extent of effusion of lymph. And this done, what is necessary seems accomplished, for the vessels without further change recover their normal tone or constitution; whereupon elements of blood no longer pass outwards; on the contrary, the tendency is now inwards, and what has been effused, is absorbed as the swelling subsides. On the other hand, in more serious injuries, fractures, burns, and lacerations, new growth is demanded for repair, and inflammation follows ulterior courses. The coherence of the inflamed vessels yields not only to the extent of effusion of lymph, but further, so as to permit the blood itself, cells and all, to issue forth in new channels, organising new growth. Thus, by extent of injury, and requirement of repair, is established two varieties of inflammation. The one, which may be called the first variety, is limited to hyperæmia, and so much change of structure as allows of effusion of lymph; in the other, or second variety, the changes extend to the formation of new vessels sustaining new growth.

So likewise, from the phenomena, it would appear that lighter injuries to the blood are relieved by the first stage or variety of inflammation—such are *gout*, *rheumatism*, *measles*, and *erysipelas* and *scarlet fever* in their mild forms. But that graver injury demands the

ulterior changes, and pus, which is a form of new growth, appears in *plague, traumatic fever, small pox*, and the severer forms of *scarlet fever* and *erysipelas*. In all the circumstances relating to life there is a middle term, and it is that only which is co-ordinated with benefits to health. Too much and too little food is hurtful; too much warmth is heat occasioning burns and scalds; too little is cold producing chilblains and mortification. Health is in the middle,—a yielding of structure at either extreme; so it is with respect to inflammation itself. When injury has been sustained, a certain amount of yielding in vascular tissue subserves the purposes of cure and repair; but from this required amount, a deviation on either side is disease. It has been shewn, that every part of the human body passes through progressive phases of growth; and that every phase of growth has its forms of disease. And if in natural or original growth we find monstrosities and defects—arrests of development and excesses—exuberance and deficiency; so, *a fortiori*, analogous deviations may be expected in preternatural inflammatory growth. "If injured textures are repaired and wounds heal, *inflammation is healthy;* if granulations persist and will not heal, *inflammation is unhealthy;* and if normal textures continue to yield, giving way to inflammatory growths, *scrofulous disease is established.*"

The general conclusion which arises from the establishment of the foregoing propositions, may be expressed as follows.

Vascular tissue, upon injury or irritation, recedes from its established or completed form to some anterior type of growth. Blood vessels yield in structure; upon which follow effusion of lymph, and the formation of new vessels sustaining new growth. To this phenomenon the term inflammation is applied. The products or results are extremely various: repair of injury, elimination of morbid matter from the blood, pustules, abscess, ulceration, and scrofulous diseases.

"As to what may be the *essence* of small pox, I am, for my own part, free to confess that I am wholly ignorant. Nevertheless, when I carefully weigh the evidence of the symptoms, it suggests to me the idea of inflammation. In clearing herself of this, nature is at work during the first two or three days, striving at the digestion and concoction of the inflamed particles, with the intention of afterwards discharging them upon the surface of the body, for the sake of maturation, and finally of expelling them from her boundaries under the form of little abscesses.

"We must, then, if we wish to make our *methodus medendi* the superstructure to a foundation in principles, recognise two periods in this disease: first, the period of separation; secondly, the period of expulsion.

"The first of these two periods is generally passed in a febrile ebullition, which usually is completed within the first three or four days. *During this stage nature is employed upon picking out and gathering together those inflamed elements which fret the blood, in making them*

over to the fleshy parts of the body, and in depositing them therein. This being accomplished, she returns to her former repose, having allayed the tumult which was excited during her operations in the blood.

"When the ebullition has thus brought about the separation, the process of expulsion begins, and this continues during the remainder of the disease, by means of the little abscesses in the solid parts. These, inasmuch as they agree with a true abscess in character, pass through all the stages, viz., those of crudity, maturation, and exarescence. If all this is done properly matters are safe; upon its being done properly, however, all chance of cure depends; everything goes wrong when this is faulty."—*(Sydenham.)*

In local injury, the person at the time is usually in health. The blood is healthy; inflammation sets in with good materials. Phenomena take the normal course; and the cause of irritation ceasing, cure follows. But when the blood itself is suffering from injury or disorder, inflammation commences with degraded or imperfect elements; and, therefore, the action is more likely to exhibit irregularity in its course. When a bone has been broken, the case comprises: first, the fractured bone, with loss of use of the limb; and, secondly, the history of inflammation,—its course and transformations for cure. Analogously in epidemical disease, the illness comprises: first, the injured or contaminated blood; and, secondly, the history of some form of inflammation, eruption, pustules, abscess, or crisis, established for the discharge of the tainted particles. When a fracture occurs, we know what occasioned the injury, and we can see or determine the amount of mischief, —*simple, contused, comminuted, compound,* &c.; and thus we are prepared for an easy or protracted, difficult or dangerous, process of cure. On the other hand, in epidemical diseases, we know but little, perhaps nothing, of the miasm, or of the amount of injury it has inflicted on the blood; and, therefore, there is here a very insecure ground upon which to base an anticipation of the coming lightness or gravity of the process of elimination or cure.

We have said that pus is a species of growth, and it remains in conclusion to show how this appears. Small colourless particles or cells are universally the primary elements of growth; they constitute the early forms of all animal textures and blood-vessels. Similar small colourless particles circulate at all times in the blood, and the more abundantly the earlier the period, or the greater the energy of the growth. Such particles or cells accumulate in parts experiencing inflammation. They appear in the coats of the inflamed vessels, and loosen their texture; they exist in lymph, and are the prevailing elements of new growth; they also form the walls of the new vessels; and, lastly, they are extremely abundant in pus. These considerations, together with the determined manner in which pus arises and accumulates in spite of many obstacles of a physical kind, and the remarkable way in which established blood-vessels recede before it, prove that *growth* is

the appropriate idea to be attached to the formation of pus. A retrogression of vascular tissue or inflammation precedes alike repair, new growth, abscess, pustules, and ulceration. It is in products or results that differences arise. In growth and repair, the new matter which follows upon the retrogression enters into new forms, new blood-vessels appear, and granulation structure arises. In abscess, pustules, or ulceration, it does not enter upon new forms, remaining fluid: so that when the wall of the abscess gives way it flows out as pus. In abscess or pustules, the purulent accumulation forms the prominent character; it occasions the swelling, whilst the receding changes in the surrounding vascular tissue are not so readily perceived; but in an open ulcer these constitute the prominent character, because the pus is continually discharged.

Finally, arsenic and mercury are virulent and destructive poisons; yet no one doubts that both may be so adjusted, in quantity and appropriateness of application, as to become most valuable medicines. So, analogously, of inflammation, no one doubts its destructiveness in respect of the vessels and textures in which it appears; yet still, adjusted by the hand of nature, in quantity and appropriateness, it opens the way to repair of injury to the textures of the body, and to the elimination of morbid matter circulating with the blood.—*Association Med. Journal, March* 31, 1854, *p.* 281.

161.—ON METASTASIS, IN ITS PRACTICAL BEARINGS.

By Thomas Hunt, Esq.

The object of this paper is not to demonstrate the existence, nor yet to investigate the nature, of that process by which disease is sometimes translated from one organ to another, but to inquire in what manner and to what extent the knowledge of such a principle or contingency should modify or restrain the practice of the physician and the surgeon.

That diseases do occasionally attack two or more organs or regions in succession, which have no direct continuity of parts, or special physiological relation to each other; and that, in this translation of morbid action from place to place, a mutation or conversion sometimes occurs, that is, a change in the character of the disease as well as in its locality,—are well established, and, as far as I know, universally admitted facts. The manner in which these changes have been explained by different writers has been sufficiently contradictory and confused, to show that the subject is imperfectly understood. Nevertheless, authors of repute have spoken with confidence, and even with dogmatism, of the "salutary" nature of certain diseases of local or superficial seat, describing them as protective and prophylactic, and as manifesting a condition of the system which forbids all interference, whether surgical or medical; inasmuch as they cannot be cured without risk of the morbid action being transferred to some important or vital organ.

In inquiring into the origin of this somewhat popular conceit, I was naturally led to place all the diseases described by different writers as salutary disorders in a class by themselves, in order to see if any common property could be found in each of them which would both identify them as belonging to so distinguished a group, and explain the nature of their protective power; but they do not appear to have any one pathological property in common. Some consist of inflammation, others of passive discharges; some affect the skin, some the bones, some the ligaments and muscles; others, as convulsive asthma, appear to reside in the nerves. At length, on reflecting upon their history, one feature, common to them all, disclosed itself, which seems to a great extent to explain the grounds upon which they have been pronounced salutary. It is simply this; *they are all difficult of cure.* Every disease, without exception, which it is thought dangerous to cure, lest some important organ should become affected by metastasis —every disease considered protective, or salutary, or prophylactic, and thus to be regarded with a kindly feeling of forbearance on the part of the practitioner, and to be considered as a necessary but minor evil on the part of the patient—every one of these diseases happens to be *difficult of cure.* The following catalogue embraces most of them:— Gout, asthma, hemorrhoids, fistula, ulcers of the legs, otorrhœa, cutaneous diseases of the chronic class, especially eczema, porrigo, strophulus, lichen, prurigo, urticaria, herpes, furunculus, lepra, psoriasis. All these diseases are occasionally, and most of them always, difficult of cure: and each one of them has been accordingly assigned, by one author or another, to a class of diseases supposed to be salutary or protective to the general health, and which cannot, as a general rule, be cured without risk. The accomplished Dr. Parry, late of Bath, described gout, asthma, hemorrhoids, and ulcers, as especially protective of the general health. Fistula and otorrhœa are, even to this day, often allowed to take their course, not unfrequently a fatal one, under the erroneous assumption that "something worse" would follow if these discharges were suppressed; and, as regards cutaneous diseases, the late Mr. Plumbe actually placed in a class by themselves the diseases, no fewer than seven in number, which he believed to exert "a probably salutary influence on the system." Rayer says: "The best advice which can often be given to patients advanced in life, and of infirm constitution, is, not to attempt the radical cure of such an infirmity as chronic eczema, if the disease be at all endurable. The removal of these natural(?) drains of the system is often followed by serious symptoms of a different kind." Mr. Erasmus Wilson coincides in this opinion, and both authors even propose to restore the eruption by counter-irritation after it has been cured, to prevent injury to the health, not only where such injury has actually taken place, but where there is reason to believe that it would result from the drying up of eruptive discharges of long standing; yet it is remarkable that eczema, the disease which both Rayer and Wilson

regard as salutary in certain cases, is not included in Mr. Plumbe's list of salutary eruptions; neither is lichen, another disease which Rayer would prefer leaving to itself. If there is any truth in these doctrines, one cannot fail to perceive that this morbid provision for the safety of the patient is in general a sufficient safeguard, inasmuch as there are few diseases considered more difficult of cure, or less likely to be cured by ordinary treatment, than those which are thus said to be appointed to the guardianship of human health.

It cannot be denied, however, that there prevails in the profession a *suspicion*, to use no stronger term, that some of these diseases cannot in all cases be safely cured—a suspicion which has a most unhappy influence on practice, and which often prevents that steady perseverance in the treatment of chronic disease which is always essential to success; yet a suspicion which, if well founded, cannot too soon ripen into certainty, and, if not well founded, cannot too speedily be scattered to the winds.

That this question is worthy of calm inquiry, may be proved by the consideration that, while we are hesitating, the quack is acting. Reckless of consequences, he pushes his specifics, and in some instances cures the disease, with impunity certainly as regards himself, and possibly as regards the patient; while we are shaking our heads over the case, and hesitating lest even our legitimate practice should be brought into discredit by sequences which are too often mistaken for consequences.

The class of facts which are appealed to in support of this dogma are of this kind. We are told that we often succeed in relieving internal congestion by external stimuli, used for the purpose of producing what we call counter-irritation. And further, if the congestion is chronic in its nature, we are sometimes enabled to unload the vessels of the affected organ by establishing a discharge from the integuments, by means of blisters, tartar emetic ointment, issues, or setons. The current of the circulation is thus diverted, and the patient is relieved. Hence we are apt to conclude, *vice versâ*, that, in an opposite case, a drain being already established through an ulcer, eruption, or mucopurulent discharge, if this drain is stopped, the current will be reversed, and some internal congestion must be expected to take place as a consequence. I submit, however, that the premises do not warrant such a conclusion; neither is it borne out by facts. It is a very low and mechanical view which some writers take of the causation of disease, when they attribute it solely or chiefly to increased momentum of the circulation. It is as fallacious as attempting to explain the theory of digestion by regarding the stomach as an alembic. The fallacy of deducing the theory of metastasis from the results of counter-irritation may be thus exposed. There is in every patient, as a general rule, a tendency towards health, an inherent power which only requires certain conditions and opportunities for action, and the patient recovers. Now, take a case of

internal congestion. The circulation of the part is clogged; the vital stream is interrupted in its flow; there is not room for the transmission of the proper quantity of blood in the proper time. Divert the current of blood, congest the veins of some part not in the immediate vicinity, and you reduce the quantity of blood to a stream which can pass freely, and the part is thus enabled to recover; but when it has recovered, it must be supposed to have resumed the tone and vigour of health; consequently, if your issue is allowed to dry up, you do not, *cannot* thereby create disease in a healthy part, provided the quantity of blood in the system, and its quality, are both equivalent to the requirements of health. It is, therefore, in the highest degree unphilosophical to suppose that healing a blister, or an eruption, or an ulcer, seton, or issue, can, under ordinary circumstances, create disease, or even re-establish bygone disease.

But it may be replied that such occurrences have taken place, and that these have been sufficiently frequent, and sufficiently varied in their character, to establish a sort of rule which should put us on our guard. Patients, in whom inflammation of the lower extremities, with œdema of long standing, has been indiscreetly treated with cold lotions and bandages, have been for the first time seized with epilepsy. Others, having suffered for years from ulcerated legs, have been seized, upon the healing of the ulcers, with sickness and vomiting, headache, and giddiness, or fatal disease of the heart. In two cases, related by Dr. Parry, the immersion of a gouty foot in cold water, which produced instant relief from pain, and a proportionate abatement of the inflammation, was, in a few hours, followed by hemiplegia. And it is granted that the cure of cutaneous diseases has been known to issue in different forms of dyspepsia, asthma, and dropsy. In each of these cases possibly, the treatment was mischievous; and, if no better treatment could have been devised, it were better to have left the patient to his fate. But granting all this, it may still be denied that the treatment was anything more than the *occasional* cause of the disease.

It has already been observed that, as a general rule, there is in patients a strong tendency towards health. But some patients are too weak to be healthy. There is something deficient in their *vis vitæ*. In them, the functions of life cannot all of them be healthily and vigorously performed for any great length of time together. One organ or another flags, as if it required rest. In some, the action of the heart intermits every twenty or thirty beats; in others, the stomach flags, and fails to digest the food; and in many, the bowels become weak and will not act, or the kidneys fail, and gout or dropsy supervenes. After a fit of illness, these patients often recover for a time, and begin to think they are strong and hearty; but soon they fail again. Now, it is this class of patients who are subject to metastasis, revulsion, translation, reaction of morbid irritability, and every other kind of morbid change. These individuals are few in number, as compared with the mass; but, as they figure largely in the daily list of patients, it

becomes a practical question, how we can treat their more ordinary, and especially their local infirmities, without seeming to light up the latent embers of organic disease into a flame.

And this is the practical question which it is proposed to discuss. What is the safest mode of treating local disease, when there is any real or imaginary danger of metastasis?

In the first place, ought such disease to be left to nature? Surely, it becomes those who maintain this, to point out the general limits to which our interference with disease ought to extend. There is, perhaps, no one disease which has not been known to give place to another; and, unless we have some means of ascertaining that the disease which may succeed will prove less serious than the existing one, we ought on this principle to leave all disease to nature. This reasoning would at once, if carried out, put an end to the practice of medicine. It is a refinement of the homœopathic doctrine, in which we are charged with creating more diseases than we cure. In truth, to shrink from the treatment of local disease, under the influence of an undefined apprehension of serious consequences to the general health, shews either an ignorance of the resources of medicine, or a great want of confidence in those resources.

At the same time, it must be admitted that there is a way of treating local and superficial disease, which may possibly so act on the general system, as to develope organic disease, whon there exists a predisposition to it. I refer to *local and discutient treatment, pursued regardless of the general health.* And to this I should feel disposed to attribute, not only the results of the cases alluded to, but *every unfortunate case of metastasis occuring in consequence of medical treatment.* And this remark applies not only to local diseases of constitutional origin, but also, in some degree, to local diseases of local origin; inasmuch as some of these, from their severity or duration, may at length implicate the general organism, and then local treatment may embarrass the circulation: whereas the cure may be very safely accomplished merely by assuming the existence of some general lesion, and combining with the topical treatment such a course of alteratives as shall effectually excite into activity such of the secreting organs as can readily be stimulated by medicine.

Questions of the following nature are often put by patients. One inquires, Is it safe to allow this issue, or that seton, to heal? Another, says, I have had an ulcer on my leg for many years, and I am told if it heals I shall be struck with apoplexy: is it safe to heal it? A third has an extensive eruption, which has rendered life miserable for many years, and he is told that it is a great preservative of health, although he is, perhaps, all the while, conscious of very much impaired health; he asks if it is right or prudent to use any means for the restoration of his skin, or whether he is doomed either to carry his affliction to the grave, or to seek relief at the peril of his life? Now, the answer to all these questions will, I apprehend, depend upon the ante-

cedents in each case. An issue, or a seton, which has manifestly been useful in relieving the patient of some local congestion or lesion of magnitude, may be allowed to heal at any period; provided only, either that some satisfactory evidence can be produced that the tendency to disease has subsided, or else that the discharge may be compensated for by a scale of diet or regimen, or a course of alterative remedies, which shall supersede it in effect. And what is true of these artificial drains, is also true of morbid discharges of spontaneous origin. This ulcerated leg, or that eruption, may be very safely healed, not only without danger to the general health, but probably to the manifest improvement of it, provided it is healed, not as a navigator would dam up a leak in a reservoir, but as a skilful physician would heal every curable disease, both within and without, by adapting his treatment to the infirmities of the constitution, particularly with reference to the glandular system, the digestive organs, and any other part of the economy which is liable or likely to become defective or redundant in its action, or lame and irregular in its functions.

To enter into detail on this part of the subject, would be the same thing as writing a treatise on the modern practice of medicine. For nearly all the cases which are liable to metastasis are to be found on the broad and hazy line which unites rather than separates the practice of physic and of surgery.

In requesting to be favoured with the views and experience of my brethren, on this important practical question, which concerns the treatment of disease generally, in all its departments, medical and surgical, I may be permitted, in conclusion, to say that my own experience has fully established the conviction that the safest as well as the most satisfactory method of treating local disease is to treat it constitutionally—to attack it from within, not from without: and, in cases where there is no necessity for surgical or mechanical treatment, to abstain as much as possible from local medication, or at least to make it secondary to the general treatment, and directed rather to the relief of pain or irritation than to the ultimate cure of the disease.

Three classes of facts which have come before me, have confirmed these views:—

1. Although it has occasionally happened to me to be told by a patient suffering under skin disease, ulceration of the lower extremities, or other local ailment, that his health is *now* very good, but that before the local disease broke out his health was unsound; yet, for one case of this kind, I have met with at least a hundred in which the reverse has occurred—the health has been very good until the local disease appeared, the general disorder then accompanied the local, and on recovery from the latter, the patient has also recovered his general health.

2. In the exceptional cases—that is, where improved health has appeared to result from the outbreak of eruptive or ulcerative disease,

and where, if anywhere, local disease might be presumed to be salutary or protective, and therefore not to be cured without risk—I have invariably treated the disease (which, if eruptive, is generally some form of eczema), not by external medication, but by purgatives, diuretics, sudorifics, and every kind of treatment calculated to augment the excretory discharges; at the same time enjoining active exercise and abstemious diet. And the same line of treatment has been pursued during the healing of ulcers on the legs, when they have appeared to be the means or condition of improved health. And whenever this plan has been adopted, I have never, in any single case, known the health to become deteriorated in consequence, nor have I ever seen any reason to regret the healing of these so-called salutary eruptions and protective ulcerations.

3. I have observed, in common no doubt with many of the Fellows of this Society, that in those rare cases in which a strong disposition to metastasis has been manifested in the system, it has been connected with a peculiar idiosyncrasy, to which no general rules either of theory or practice can possibly apply; and in these cases, *medicine seems to have no power to control disease.* The viscera and the tegumentary tissues are affected alternately, and no human means can either drive the disease from one part of the system to another, or effectually check its violence in any organ or tissue which it may happen to attack. Thus, I have known a case in which every year a child was attacked with an eruption of boils on the scalp, and, as these subsided, the brain became affected; both the boils and the cerebral disorder became more severe every year, until the disease ultimately proved fatal. No medical treatment appeared of the slightest use. The disease always took its course. The membranes of the brain were found inflamed after death.

These cases of metastasis are extremely rare as compared with the mass. Yet, because they are rare, they are very generally published; whereas, the every-day cases, those in fact which establish the rule for practice, are not published because they are common. The result is, that cases of metastasis are thought to be much less rare than they really are.

As a general rule, then, I greatly question the existence of any disease which is essentially of a salutary nature, or which is of so much importance as a safeguard to health, as to deserve the slightest consideration, as such, at our hands. We meet with cases, indeed, in which perfect health cannot long be maintained; disease will appear in some form or in some locality, attacking sometimes one organ or structure, sometimes another, sometimes both at once: yet even here medicine is not altogether at fault; judicious and rational treatment will generally improve the health of the most unhealthy.—*Association Medical Journal, May* 5, 1854, *p.* 390.

162.—ON GALLIC ACID IN THE HEMORRHAGIC DIATHESIS.

By Dr. William Bayes, Physician to the Brighton Dispensary.

[When we wish for a local styptic or anti-hemorrhagic remedy, we may use tannic acid; but this becomes changed into gallic acid in its course through the system to any distant part, and therefore it is better perhaps to use gallic acid at once. Gallic acid enters the blood rapidly, and in a case of Dr. Bayes', the bloody sputa became perfectly *inky* in less than two hours from the first taking of gallic acid, the hemorrhage at the same time ceasing.]

The effects of tannic and gallic acid on dead animal tissues are familiar to us in the process of tanning. It contracts and hardens the dead animal tissue. Experiments have also shown that a saturated solution of gallic acid, mixed with fresh drawn blood, both quickens coagulation and hardens the clot. Solutions of vegetable astringents thrown into the veins of animals have produced death through coagulation in the central organs of circulation; and since the astringent power of all vegetables depends upon the amount of tannic and gallic acid contained in them, and since we have seen that gallic acid readily enters the blood, I think we may fairly assume that, when introduced into the human system, gallic acid acts through its tendency to contract and condense the fibrous tissues, and to coagulate the vital fluids, wherever they have this natural disposition.

Affecting, therefore, as it does both the circulating fluid and its containing vessels, giving an increased proclivity towards contraction in the one and towards coagulation in the other, this twofold effect of gallic acid, and the perfect safety with which the largest dose may be administered, should render it our sheet-anchor in hemorrhage, both active and passive.

The ease and rapidity with which it enters the blood render it equally powerful to arrest hemorrhage throughout the whole body. If the vital stream be oozing in passive flux from relaxed and atonic vessels, it will contract them and steady the circulation; or if a bounding pulse forces an active hemorrhage through the torn walls of some weakened vessel; it will contract this, and form a firm clot around it, reducing the pulse and the heart's action at the same time.

Where an overdose of gallic acid has been taken, the pulse becomes small and wiry, the face grows pallid, a whizzing sound is heard in the ears, the head feels dizzy, and faintness supervenes. These symptoms arise from the contraction of the capillaries and larger vessels produced by the astringency of the remedy, and the consequent interference with the intra-cranial circulation. But I conceive it would not be possible to poison a patient by the largest dose of the remedy when introduced by the mouth, because the capillary and distal vessels would become too contracted to receive any further supply, long ere a sufficient

quantity could be carried into the blood to produce dangerous effects upon the central circulation.

The ease with which gallic acid enters the circulation renders it a most valuable remedy, not merely in hemorrhages, but also in those diseased habits of body in which excessive secretion becomes a prominent and distressing symptom, and also in some other diatheses, which I will proceed to enumerate.

Dr. Scott Alison, in a paper on Tannic Acid, which appeared in the 'London Journal of Medicine,' for Jan. 1850, has recommended its use as a tonic in dyspepsia—as a nervine in languor and debility—as tending to arrest tubercle and malignant disease—and as valuable in rickets, in phthisis, in bronchitis, when accompanied by profuse expectoration, and in arresting colliquative diarrhœa and exhaustive sweats.

Dr. Burns, of Glasgow, praises the powers of gallic acid in chlorosis, in doses of one hundred grains daily. From a consideration of its effects upon contractile tissues and upon the various solid and liquid constituents of the animal body, we should anticipate benefit from the use of gallic acid wherever relaxation of the one or too great fluidity or dilution of the other were apparent, and experience fully testifies its virtues in the very classes of disease where advantages from its exhibition were predicated.

In the following classes of disease the remedy is worthy of every confidence.

I. In active hemorrhage, from whatever organ or part of the body they proceed.

II. In passive hemorrhages, hemorrhagic diathesis, purpura, &c.

III. In excessive secretions, as in pyrosis, serous diarrhœa, chronic bronchitis, bronchial flux, profuse night sweats, some forms of dysentery, and perhaps in diabetes.

IV. In atonic states of the alimentary canal and of the body generally, especially in rachitis, and in those cases where a weak and congested state of the capillaries is apparent.

V. As an adjunct to other means in piles, wounds, &c.

[Although gallic acid is thus extolled by Dr. Bayes, we have found it inferior to turpentine when the bleeding is from the alimentary canal, and to lead when the hemorrhage is pulmonary.]—*Association Med. Journal, June* 9, 1854, *p.* 506.

163.—*Hemorrhage from the Jejunum.* By Dr. R. B. Todd.—Though the theory of hemorrhage by exhalation is somewhat surrounded by obscurity, we now and then meet with cases which afford striking proofs that the blood cannot have escaped by any other way than exudation; and among these instances a perfectly unbroken intestinal mucous membrane after death from melœna, is one of the most

unanswerable. When this form of passive hemorrhage takes place in a patient debilitated by want and mental distress, we are naturally led to establish a comparison between the intestinal hemorrhage and purpura. For it is plain that both pathological phenomena are originally the same, the difference being simply that the epithelium offers less resistance to the passage of blood than the epidermis. No doubt but the fluid of perspiration finds its way through the cuticle, but we may suppose that in diaphoresis there is more force acting from within and more relaxation of the vascular network.

To return to hemorrhage from the bowels, it may be stated that cases of this kind are of a very distressing nature, both as regards the patient and the physician, since it is extremely painful to the latter to see the life-blood oozing from the system, and to observe the inadequacy of the means adopted for the control of the hemorrhage. And the task becomes doubly difficult in cases where bad nourishment and depression of mind have been principally conducive to the hemorrhage, for it may be supposed that in such cases two powerful causes are acting at the same time—viz., increased fluidity of the blood, and want of tone in the vessels. It is evident that astringents, topically used, can only act upon the vessels of the affected mucous membrane; and the aqueous condition of the blood remaining the same, it cannot excite surprise to see the best directed means for arresting hemorrhage proving useless. It is here that prevention should be thought of, for by proper medicines and diet the conditions of the circulating fluid may be greatly improved, and this favourable result might in many instances altogether prevent, or render but very trifling, an attack of intestinal hemorrhage.—*Lancet, June* 17, 1854, *p.* 634.

164.—ON UTERINE POLYPUS.

By Dr. Robert Barnes.

[The following remarks ought to have accompanied Dr. Barnes' other papers at p. 292. Polypus uteri is a term used perhaps too carelessly to describe affections of very different kinds, sometimes cancerous and cauliflower excrescences are erroneously called polypi.]

The classification of polypi admits of more precision than I think has hitherto been observed. On an analysis of cases occurring in practice it will be found that polypi take their rise from three sources: from the bloodvessels lying under the mucous membrane, or from the mucous membrane, or sub-mucous fibro-cellular tissue. I believe that a division thus founded upon the origin is at once the most scientific and the most practical.

1. *On Polypi springing from the Muscular Wall of the Uterus.*—The polypi which take their rise in the muscular walls of the uterus have been commonly called "fibrous." Recent investigations have, however, prove that they really consist in an abnormal develop-

ment of muscular fibre, their structure essentially resembling that of the muscular wall of the uterus itself. This muscular character of the so-called "fibrous tumours" and "fibrous polypi" of the uterus, both in the unimpregnated and in the gravid womb, was first, I believe, distinctly proved, by Vogel, and figured in his admirable work. Cruveilheir had, however, previously observed that there were "hard polypi," which consisted in hypertrophy of the tissue of the uterus—such is the one figured pl. vi., liv. xie—and others consisting of fibrous bodies developed under the uterine mucous membrane. The celebrated French pathologist thus describes the structure of the polypus referred to: "The figure represents an antero-posterior section of the polypus and of the fundus of the uterus. The tissue of the polypus is seen to be continuous, without any line of demarcation, with the proper tissue of the uterus; it is a prolongation of this proper tissue, and not a fibrous body developed in the thickness of the uterus, capable of being separated by enucleation. The identity between the tissue of the uterus and the tissue of the polypus is such that the closest examination does not reveal the slightest difference."

Cruveilhier does not appear to have suspected that the ordinary fibroid tumour, distinctly defined from the proper uterine tissue, and capable of enucleation, might also consist of muscular fibre in every respect resembling the muscular fibre of the uterus.

As this discovery is of especial interest in relation to the pathology of uterine tumours and polypi, I think it of importance to translate Professor Vogel's account at some length. In describing fig. 5 of pl. ix., he says, "It represents the primigenous cells of a fibrous tumour arising in the uterus. These cells are doubtless the rudiments of organic muscular fibres, which but rarely come under observation. The history of the disease is as follows:—A single woman, aged forty-four, was admitted into the hospital, after having suffered for several years from a fluctuating swelling in the right side of the abdomen, which hitherto had caused no pain, a dragging sensation, as if the patient were about to bring forth, only excepted. Suddenly violent pains came on in the abdomen, increased by pressure. These continued, notwithstanding energetic treatment by bleeding and emollients. The patient died after three days.

"The autopsy gave the following results:—The omentum was considerably thickened on the right side, and adherent both to the abdominal walls and to a hard tumour, which reached below into the pelvis, and was of the size of two fists. The tumour was knobby on the surface, of a white colour, and hard to the feel; it was intimately connected with the fundus of the uterus, from which it seemed to spring. The inner surface of the uterus appeared natural: the mucous membrane unaltered. In its cavity, however, was a round tumour, the size of a billiard-ball, hard, of a bluish-white colour, and covered with a yellowish purulent matter. It lay free in the cavity of the womb, without any attachment to the walls. The substance of the

uterus was much thickened; the thickness was not uniform, but in many places it was three inches. In the substance were many round tumours, of the size of a pea, of a bean, of a walnut, up to that of a billiard-ball. These tumours were for the most part free, or at least could be easily detached from the surrounding substance of the uterus: they were of a white colour, and very firm texture. They were in general bullet-shaped, but most of them were knobby. On section, they showed interiorly the same hard, glistening tissue as the outside; but a fibrillation or distinct texture could not be distinguished by the naked eye. The large tumour first described, arising from the fundus uteri, was softened in parts; it exhibited irregular, eroded excavations, traversed by bands, which were soft at the surface, but hard in the interior. These cavities were, some empty, some filled with a soft blood-coagulum, or a greasy, purulent, gray matter. The softened tumour was broken above, and had emptied a part of its contents into the cavity of the peritoneum, whence secondary peritonitis and death.

"Another tumour, of the size of a pigeon's egg, was found in the vaginal portion of the uterus; this was softer, and could not be separated from the uterine substance. It was white, and consisted of a fibrous web with large meshes filled with a thick albuminous fluid.

"A more minute examination of these parts by the microscope gave the following results:—The substance of the uterus consisted of the ordinary organic muscular fibres. In some places brownish cells in great numbers were found between these fibres.

"The mass contained in the cavity of the uterus showed quite the same structure, the same fibres, and similar brown cells. The tumours contained in the substance of the uterus, both great and small, were exactly similar. The upper softened part of the large tumour contained, together with blood-clots and isolated blood-corpuscles, many pus globules, which underwent the ordinary change with acetic acid. The softening of the tumour was plainly occasioned by inflammation. The traversing bands and threads in the cavities of the softened portion were recognised under the microscope as the *débris* of organic muscular fibres and connecting tissue, which had withstood the destruction of the surrounding tissue. The softer tumour in the vaginal portion appeared to be a fibrous tumour; the fibrous portion consisted of organic muscular fibres and connecting tissue; the albuminous-looking fluid in the meshes showed numerous round or elongated cells, sometimes solitary, sometimes in groups, probably primary cells, which, later, would have been developed into muscular fibres.

"Some of the tumours contained in the substance of the uterus were carefully enucleated, cut into small pieces, repeatedly washed in water, and submitted to chemical investigation. They were gradually dissolved in boiling concentrated muriatic acid; the solution was colourless. In acetic acid they swelled up, became translucent and gelatinous; but a perfect solution was not obtained at the end of a week's treatment.

"Similar pieces, carefully washed with water, then dried between pieces of blotting-paper, were weighed, and completely dried at a temperature of 100° in a water-bath, and again weighed; 1000 parts of the fresh substance gave 220 parts of dried residuum."

The next figure described by Vogel is that of a similar muscular tumour taken from the hypertrophied muscular coat of a man.

Another figure is taken from a fibrous tumour of the uterus of a woman who had died from heart-disease. The tumour was of the size of a walnut. "Its texture had altogether the ordinary character of fibrous tumours. Portions taken from the interior showed very beautifully the development of fibres out of cells: many elongated nucleated cells were bound to a fibre which in every respect resembled the ordinary fibres of organic muscle."

[Dr. Oldham was one who very early recognised the muscular structure of fibrous tumours of the womb. This will be found in Guy's Hospital Reports for 1844. It is the well known case of Dr. Crisp, who found a tumour in the womb after delivery which could not be extracted. The women died collapsed.]

Dr. Oldham says, "the prevailing tissue (of this tumour) was a clear unstriped fibre, which when examined with a portion of the muscular fibre of the uterus, differed only in the latter being more full of cells and blood-corpuscles, which rendered its definition as fibre less distinct than the former." In 'Guy's Hospital Reports,' for 1852, Dr. Oldham again refers to the conclusions expressed above as to the muscular character of fibrous polypi.

In February, 1851, an opportunity occurred to myself of verifying this point in the pathology of fibrous tumours.

Case 3.—On the 6th February of that year, Mr. Chance sent me the uterus of a woman who had been brought into the dissecting-room. It had been cut open by a student. A tumour the size of a filbert had been attached to the orifice of each Fallopian tube. When sent to me, that from the right side had been removed. The other had been cut through, but its attachments were preserved. It appeared to be connected with the uterine walls by fibro-cellular adhesions, such as might easily have been lengthened out into a pedicle, permitting the tumour to escape from the uterus in the form of a polypus. The orifices of the Fallopian tubes were completely obstructed. The tumour remaining appeared to be of a fibrous structure. It was submitted to microscopical examination by Dr. Hassall and myself. It was made up of fibres in every respect resembling the organic muscular fibres of the uterus from which it was taken. I exhibited the specimen to the London Medical Society on February 17th following, stating the opinion Dr. Hassall and myself had formed as to the muscular character of the tumour. The report of the proceedings was published in 'The Lancet' at the time.—*Lancet, June* 17, 1854, *p.* 635.

165.—*On Pneumonia.* By — Martyn, Esq.—A man twenty-one years of age, said to be of delicate constitution, was seen by Mr. Martyn on the 8th March, 1852, having then been ill nine days, not wholly without treatment, but the true state of the patient apparently not recognised. He now presented all the signs of pneumonia, general and physical, and in an extreme degree, the right side being wholly without natural respiration. The constitutional distress was very great, the patient being unable to lie down, or to turn in bed. "His countenance was flushed, puffed, and anxious; skin hot and dry; respiration sixty in a minute; pulse 120; with great pain in the right side, and incessant short cough, with scanty, red expectoration. He expressed great exhaustion, was restless, and dull, and indifferent to his situation. His life seemed absorbed in the labour of breathing and coughing." Mr. Martyn was deeply impressed with the marks of want of power presented by this case, which forbad the employment of antiphlogistic measures, lest even a slight shock might precipitate the patient altogether. The following plan was prescribed:—one ounce and a half of sherry wine every two hours, and good broths and milk. Sesquicarbonate of ammonia, five grains; potassio-tartrate of antimony, one-sixth of a grain; nitrate of potash, ten grains; spirit of nitric ether, twenty minims; water: make a mixture, to be taken every two hours; also a pill, containing three grains of calomel, and one of opium, in the morning and at bed-time. A large blister was applied to the chest. The following day the respirations had fallen to forty-six in the minute, pulse 110; the exhaustion was still fearful. To continue the plan, substituting chloric ether in the mixture for the nitric ether, and one dose of calomel and opium at bed-time. He had a second blister on the following day, and went on slightly improving, except that he had scarcely slept at all. But little other change took place till the 12th, when some degree of pneumonia was detected in the left side, the exhaustion being still very great, and the pulse more than 100. A third blister was applied, and the wine and other nourishment continued with little interruption. His improvement was progressive, although many weeks elapsed before his recovery was perfect. He has since been as well as ever. This case appeared to the author to be suggestive of some such reflections as the following: From how very extensive and grave an inflammation of the lungs a patient may be rescued, whilst in another a much less degree will destroy life. Here was a case, in which the whole of the right lung was affected throughout, even to dulness on percussion; and the left to some extent, posteriorly and below, was dull, and characteristic small râle existed in it, and life was carried on at the labour of sixty respirations in the minute. To keep the patient going, some active plan was demanded, and stimulants appeared to present the only hope. This was the second and chief point to which Mr. Martyn wished to draw attention. He thinks the case goes far to establish that stimulants do not necessarily disagree with, and aggravate all

cases of pneumonia, and that it is confirmatory of the observations of some of the best authorities, on the high value of stimulants in some grave forms of inflammation. Upon the whole perhaps, especially in inflammation of the chest, most men would be shy of stimulants. But in the case now related, not only were they borne well, but seemed directly to refresh and relieve. At the outset of inflammation, especially of the chest, stimulants may be uncalled for, but it does not follow that the opposite plan is to be unduly persisted in. The time comes, in all cases of some duration, to regard the wants of the system. The general nutrition of the body must be attended to; we dare not exclude any element of food essential to the economy for many days together; the vital forces soon suffer. In conclusion, Mr. Martyn inquires, have not the present generation of medical men been taught too much the *material treatment* of disease—too much that *drugs cure* —that Nature must wait upon them; and that the cure of inflammation in British practice, had come to mean bleeding, mercury, and such treatment? But, at the same time, who had not seen that in many cases the remedies had proved worse than the disease?—*Lancet, April* 29, 1854, *p.* 472.

166.—*Sickness in Friendly Societies.*—At the last ordinary meeting of the Institute of Actuaries, held at the rooms of the Institute in St. James's Square, John Finlaison, Esq., President, in the chair, a paper was read entitled "Observations upon the Sickness and Mortality experienced in Friendly Societies," by Henry Tompkins, Esq. The author commenced by urging the importance of correct data as to the law of sickness. It was more difficult to determine than the law of mortality. Mr. A. G. Finlaison, in his recent report made by order of the House of Commons, upon the sickness in Friendly Societies, in which associations nearly three millions of persons were enrolled, had determined the ratio of sickness with a greater approach to accuracy than had ever been accomplished before. Previous investigations had included claims made on account of old age with those of sickness. This had led to erroneous results. Thus at age 60 every man had been stated to be ill on an average one month in the year; at 70, two and a half months; at 75, four months; at 80, five months; and at 85, six months. In consequence of the promulgation of this erroneous data, it was supposed by many that Friendly Societies in general were in an insolvent state. The author proceeded to analyse Mr. Finlaison's report, from which it appeared that between the ages of 20 and 30 each person had on an average nearly 7 days' illness a year: at 40 it increased to 8 days; at 45 to 9; at 50 to $11\frac{1}{2}$; at 55 to 14; at 60 to $18\frac{3}{4}$; at 65, to $27\frac{1}{4}$; at 70, to $43\frac{1}{2}$; at 75, to 66; and at 80, to $97\frac{1}{2}$. It was stated that the total amount of the sickness experienced by each person in the 32 years elapsing between 18 and 50, was 260 days; in the ten years between 50 and 60, 147 days; between 60 and 70, 299

and between 70 and 80, 712. Locality had very little to do with the ratio of sickness. It had also been found that the duration of sickness was in the inverse ratio to susceptibility of attack, as shown in the proportion of persons attacked with sickness. Thus in the northern parts of England nearly 20 per cent. were yearly attacked with illness, while in the midland districts 30 per cent. were so attacked; but, on the other hand, the proportion of sickness to each sick man in the north amounted on the average to 50 days, while in the midland districts it reached only to 36 days: the liability to attack being balanced by the duration, thus making very little difference in the amount of sickness experienced in one part of England when compared with another. With regard to the mortality experienced in Friendly Societies, it was very light, there being at age 20, only 1 death in 135; at 30, 1 in 130; at 40, 1 in 97; at 50, 1 in 67; at 60, 1 in 38; at 70, 1 in 18; and at 80, 1 in 8. This part of the inquiry coincided with previous investigations almost to repetition. The report divided labour into two classes,—viz., light and heavy labour; and each of these again into the two sections—labour in the open air, and labour under shelter; and the results showed a great difference in their ratios of sickness and mortality. The most healthy condition of existence appeared to be "light labour in the open air." The author concluded by enunciating the theory, that the duration of sickness was in direct proportion to the vital power. Thus, let Sx the sickness, be multiplied into the numbers out of which one will die, or intensity Ix, it should produce a constant number C. It was stated that tables of payments required in Friendly Societies, calculated from the report by Mr. Finlaison, were in the press.—*Med. Times and Gazette, July* 15, 1854, *p.* 56.

167.—ON THE MEDICAL AND POISONOUS ACTION OF ALCOHOL.

By Dr. H. Bence Jones, F.R.S., Physician to St. George's Hospital.

Alcohol, like most, if not all stimulants, does not act on muscles and nerves with more energy the greater the quantity of the stimulant taken. When a great excess is administered, it acts like cold or heat externally, or like ether or chloroform internally when inhaled. In great excess these substances cease to act on the nerves and muscles as stimulants, but, on the contrary, they produce insensibility, depression, coma, and death. During the course of these lectures, I shall have occasion to dwell on the same double action as exhibited by quinine, which acts in small doses as a stimulant, and in large doses produces the most remarkable depression of the nervous system. In digitalis, and even in opium, the same double action may also be observed. In addition to the stimulating action of alcohol on the muscular structures and nerves, it acts through the circulation on every tissue. It produces a chemical effect. This is best seen when it is used for the preser-

vation of morbid specimens. Even in the living body, this action may be observed, but it cannot be separated from the effect produced by the stimulating action. Thus alcohol hardens the skin, when applied locally. It hardens and thickens the stomach. When long continued it thickens the cellular tissues of the liver. It passes off by the lungs and kidneys, and affects both organs. Ultimately it lessens the amount of carbonic acid expired, and hinders the removal of the products of decomposition by the urine. It changes the composition of the blood, and affects the nutrition of every organ and structure of the body. It has its own peculiar poisonous action on the muscles and nerves. As a poison it has been placed by its effect on the nerves and muscles between ergot of rye and arsenic. My time will not allow me to give you many illustrations of the general paralysis of the nerves and muscles, which results from the excessive use of alcohol. I must refer you to the work of Dr. Magnus Huss, from pages 50 to 75. I may shortly however mention the following case, which was admitted into St. George's Hospital, December, 1853. A bricklayer, aged 32, had habitually taken large quantities of stimulants, as much as five or six quarts of beer, and half a pint, and even more, of gin daily. About six weeks previous to his admission he was attacked with numbness of the right leg from the ankle to the knee; a few days after the left leg became numb; after a week, the numbness, with formication, commenced in both hands; after about five weeks the nose and both cheeks became numb, and increasing loss of power in the extremities obliged him to give up work and come to the hospital. He had a similar attack six years previously, and recovered after thirty-six week's treatment. On admission there was scarcely any feeling in his legs nearly to the thighs, nor in the arms up to the elbows. Both sides of the face and nose were also numb, but the forehead was free. He had difficulty in walking, and had lost much of his manual power; for the first six weeks he continued to become more and more paralysed; becoming unable to move his feet, and having very little power over his hands. After this his hands began to regain their strength. In three months after full doses of tincture of cantharides, and extract of nux vomica, he was enabled to walk, and he left the house to return to his work four months after his admission. The resemblance of this case to one given by Dr. Huss, in which the paralysis was caused by ergot of rye, is worthy of your notice.

A woman, aged 48, having been perfectly well ten weeks before her admission, was taken suddenly ill at night with violent sickness, which lasted two days. She had pain in the head, and a feeling of weakness in the limbs. She remained weak for eight days; she suffered from formication in the extremities, with pain sometimes amounting to cramp. Unsteadiness of the arms and legs succeeded, so that she could scarcely walk, or pick up things. This increased to perfect paralysis of motion and sensation, without any pain in the head or back, the bowels acting regularly. Other persons in the same village were

affected in the same way. With baths and strychnine in two months she recovered the use of her limbs.

I need not here dwell on the paralysis which is caused by arsenic, still less on that produced by lead. Phosphorus also is said to produce the same symptoms of paralysis. For the difference between the paralysis from these different causes, and for the distinction between the general paralysis of the insane, and the general paralysis from alcohol, I must refer you to Dr. Huss's work.

Alcohol is the chief poisonous ingredient of unadulterated fermented liquids. Like all poisons, when not taken in too large a quantity, or too long continued, it has a medicinal action, on which its dietetic value depends. This action may be summed up in one word, stimulant.

But fermented liquids do not consist of water and alcohol alone. Other substances are present also,—of these as most nearly related to the alcohol in volatility and action, I shall next mention volatile oils and ethers. These volatile oils and ethers chiefly determine the excellencies of different wines; the quantity present in any wine is usually so small, that very little can, under any circumstances, be taken into the body. Still these substances are of great interest to the chemist because many of these principles have lately been formed artificially, to the medical man because of the energetic action which some of these substances exhibit.

Here are some of the most remarkable of these flavouring principles which have lately been artificially prepared. Here is the essence of pear, here of pine-apple, here of grapes, here of black currants, and of many other fruits. These substances now made in large quantities are in daily use. Some of them are peculiar ethers, others are fusel-oil compounds.

There can be little doubt that the odoriferous principles of different wines will, like those of the different fruits, be ultimately formed artificially. Essence of cognac is now manufactured.

Here is a specimen of œnanthic ether, which is present in all wines and which is not the cause of the peculiar flavour of wine. It was discovered by Liebig and Pelouze. It has been formed artificially by oxidising oleic acid, and by the action of nitric acid on the etherial oil of rue. Moreover, the acid of this ether (œnanthic acid) has been found to exist in the pelargonium roseum. It is said that, in 400,000 parts of wine, one part of this ether exists. In Bourdeaux wine other ethers, as acetic ether, butyric ether, and valerianic ether, are said to exist, and these ethers contribute to that aroma which so quickly disappears on opening these wines. The Rhine wines contain even a higher aroma, but I know of no experiments on the ethers of these wines. The minute quantity present alone prevents a perfect investigation of the subject.

Generally, it may be said, that beer contains much saline matter, wines contain very little, and spirits contain none at all. Each year our knowledge of the chemical composition of these fluids will increase,

and, with advancing knowledge, we shall obtain more clearness regarding the dietetic and medicinal properties of all fermented liquids. At present, the answer to the question, Which is the best wine? cannot be given, because of the imperfect knowledge which we possess of the chemical composition of different wines. But, even when full knowledge is obtained, no universal answer can be given; for that which is best in one state, or for one person, may be the worst in a different state, or for another person. Generally, however, it may be said, that that wine is best which contains least alcohol, least acid, least sugar, and highest flavour. This is the best for a person in health; while, for a person in a state of low fever, that wine which contains least salts, most sugar, most astringent acid, and most alcohol, will cause least irritation of the bowels, will furnish most nutriment, be most febrifuge, and most supporting. Where there is much irritation and much depression, brandy will be better than wine.

In some states in which diuretic action is desirable, Moselle wine, by the excess of salts it contains, may prove almost as energetic, and far less heating, than the essential oil in gin or whiskey,—the difference in action being, that between cream of tartar and oil of turpentine.

In diabetes, ale and porter, which contain much sugar, cannot, on rational grounds, be advised; while claret, which is free from sugar, and contains perhaps much tannic acid, is highly beneficial; while cider, though free from sugar, contains much malic acid, and is diuretic.

In dyspepsia and gout, the wine which is freest from ultimate acidity, and which is least stimulating, is best. The least acid claret wines first, and then some sherry, and even perfectly dry champagne, when very free from excess of acid, are not unsuitable. When a taste is acquired for good Mansanilla, it answers all the requirements, and is obtained at a far cheaper rate than first-rate Amontillado sherry, which may be procured free from all sugar, and with little acid, and scarcely stronger than Mansanilla; and so far surpasses it in flavour, that the difference in expense is almost forgotten. But by adding water to brandy or other spirit, a fluid is obtained which is far less acid than any wine, and which may be made of any strength, and be free from all sugar. Theory, then, as well as practice leads to the belief, that if any stimulant is taken in dyspepsia, the best is brandy and water.

With regard to porter and stout, these containing little acid have much sugar, and hence give rise to much more acidity than some pale ale. Some pale ale may be found less sweet and acid than ordinary sherry, but generally pale ale is ultimately more acid than sherry, and less stimulating; yet for this compensation is made in the greater quantity of ale drunk. The larger quantity of salts in malt liquids must always be borne in mind.

Such is the meagre information which at present is the best I can bring before you to enable you to answer the question, What may I drink?—*Medical Times and Gazette, Sept.* 2, 1854, *p.* 231.

168.—*Action of Alcohol.*—From an elaborate series of experiments, the following conclusions are arrived at by Dr. Duchek: 1. Alcohol in the organism is subservient to an increased combustion, the intermediate products of which are found in the blood. 2. Intoxication is dependent upon the existence of aldehyde in the blood at the time. 3. The effect of aldehyde upon the blood is that of rapid consumption of oxygen; and, finally—4. Hereby the combustion of other substances is interrupted, or rather diminished.—*Viertel Jahr.*

[In these short remarks the reader will at once perceive the most powerful inducements to abstain from alcohol. It runs away with that oxygen which he is always inspiring for the oxidation which is required in almost every process of the animal economy. We live, as it were, to oxidize. Almost all the changes in the body are the results of oxidation, and yet the spirit drinker continually checks this process of nature.]—*Lancet, April* 8, 1854, *p.* 394.

169.—IODO-TANNIC SYRUP.

This syrup is directed to be prepared according to the following formula:—Iodine, two grammes; extract of rhatany root, eight grammes; water and sugar, of each a sufficient quantity to make a syrup, one kilogramme. Care must be taken that the extract of rhatany root employed for this purpose should be completely soluble; and in order to secure this complete solubility, the extract should be prepared *in vacuo.* The iodine is then to be dissolved in a small quantity of alcohol, and subsequently mixed with the extract of rhatany root, previously dissolved in water. The mixture is then to be poured into a glass mattrass, and carefully set aside for some hours, so that the reaction of the iodine and the extract of rhatany upon each other may be complete; which will be known by the deposition of a brown pulverulent mass. This is to be entirely separated by filtration, and then repeatedly washed with water, so as to remove any portion of iodine that it may contain; the various strained or filtered liquids are to be mixed together, and submitted to slow evaporation by means of a vapour bath, and when sufficiently concentrated, the sugar is to be added, so as to produce a syrup, which, when well prepared, should have a fine red colour, and a very agreeable taste. It will contain six centigrammes of iodine in thirty of the vehicle, and it may be preserved without undergoing alteration for an almost indefinite time. In preparing this syrup, care must be taken that glass vessels be employed.

Normal Iodo-Tannic Solution.—This solution of iodo-tannin is directed to be prepared by triturating together five grammes of iodine. forty-five grammes of tannin, and one thousand grammes of water, The solution of the iodine and tannin in the water is soon effected, when it is to be filtered, and concentrated, by careful evaporation,

until it is so far reduced as to amount to one hundred grammes, after having sedulously examined it by means of starched paper.

Ioduretted Iodo-Tannic Solution.—This solution of iodo-tannin is directed to be prepared in the same manner as the former, by triturating together five grammes of iodine, ten grammes of tannin, and ninety grammes of water, and subsequently promoting the solution in a glass mattrass, by means of gentle heat obtained from a sand-bath. This solution possesses the decided advantage of retaining the iodine it contains, in such perfect solution, that it is not deposited whatever amount of water may be added with the intention of diluting it, for it thus becomes soluble in every proportion of this vehicle; and it may therefore be substituted for the various solutions of iodine made by the intervention of either alcohol or potassa. The two latter solutions of iodo-tannin are recommended for external use, and the first—the syrup of iodo-tannin—for internal use, by Messrs. Socquet and Guillermond, who, in a paper communicated to the 'Bulletin Général de Thérapeutique,' state that, in the preparation of the syrup of iodo-tannin, they invariably avail themselves of tannin contained in rhatany root, whereas, in the preparation of the solutions for external use, they make use of tannin obtained from oak-bark.—*Annals of Pharmacy.—Dublin Hospital Gazette, Sept.* 15, 1854, *p.* 255.

170.—*Syrup of the Carbonate of Iron.*—This new preparation is described by Dr. Richardson in the 'Association Journal' of July 28. He finds that it preserves the iron in the state of carbonate for an indefinite period, and as a medicine is agreeable in taste and convenient for dispensing. It may be prepared according to the following formula:—Take of carbonate of potash half an ounce, sulphate of iron three drachms and one scruple, simple syrup eighteen ounces, water ten ounces,—dissolve the sulphate of iron and carbonate of potash each in five ounces of the water,—mix the solutions. The precipitate is to be collected on a cloth filter, and after being washed with distilled water, is squeezed into a pulp as dry as it is possible,—this pulp is then rubbed up quickly with the syrup. The dose of the syrup thus formed is from two drachms to half an ounce.—*Dublin Hospital Gazette, Aug.* 15, 1854, *p.* 220.

171.—*Iron Alum.*—Two preparations have recently been employed in medical practice by Dr. Tyler Smith, of London, under the name of *iron alum.* They are stated to possess more powerful astringent properties than common alum, and at the same time are not liable to produce the usual stimulating effects of other salts of iron. It is well known that the term *alum* is applied by chemists as a generic designation to an extensive series of salts, which coincide with common alum in constitution and crystalline form, and in the composition of

which the alumina may be replaced by any other sesquioxide. Thus we have:—

Common alum	$Al_2\ O_3\ 3\ SO_3 + KO, SO_3 + 24$ aqua.
Iron alum	$Fe_2\ O_3\ 3\ SO_3 + KO, SO_3 + 24$ aqua.
Chrome alum	$Cr_2\ O_3\ 3\ SO_3 + KO, SO_3 + 24$ aqua.
Manganese alum	$Mn_2\ O_3\ 3\ SO_3 + KO, SO_3 + 24$ aqua.

In like manner, the potash of these salts may be replaced by other alkaline bases, such as soda or ammonia; it is therefore evident that many of the salts to which the appellation alum, in its most comprehensive sense, is applied, will contain no alumina whatever.

The preparation now used at St. Mary's Hospital is obtained by peroxidizing protosulphate of iron with nitric and sulphuric acids (as in the first part of the process for preparing hydrated peroxide of iron in the 'Dublin Pharmacopœia'), and adding an equivalent of sulphate of potash. The solution is then to be evaporated with excess of sulphuric acid, until crystals form on cooling; it affords a beautiful salt of pale violet colour, which is more soluble than common alum, the solution having a reddish colour. The second salt known as iron alum is obtained by adding an equivalent of sulphate of potash to the sulphate of iron, and evaporating in the manner already described, so as to obtain crystals. As it is important that substances used in medicine should be strictly defined, the former salt ought to be designated *potassio-sulphate of peroxide of iron*, and when the ammonia salt is prescribed, it should be termed *ammonio-sulphate of peroxide of iron.* —*Pharm. Journal, Jan.*—*Dublin Hospital Gazette, March* 1, 1854, *p.* 47.

172.—*Saccharized Alcoholic Extract of Ipecacuanha.*—Mr. A. G. Dunn, in the 'New York Journal of Medical Science,' recommends the employment of a saccharated extract of ipecacuanha in preference to the usual preparations of the drug, such as the wine and syrup, which he considers liable to vary in strength; and the powder is, he thinks, objectionable, from its insolubility. The following is the formula for preparing the extract:—

> Rad. ipecac. ℥iv.; bruise to a coarse powder, and macerate for thirty days in f℥xvi. of diluted alcohol, shaking it occasionally, then filter and express. Evaporate the tincture thus formed to ℥ii., with which mix powdered white sugar ℥viij., and triturate them in a mortar until they become dry.

The extract thus prepared has the peculiar odour and taste of ipecacuan; it is of a brownish yellow colour, and soluble in water, ether, alcohol, mucilage of acacia, and in fact, in all the solutions with which this remedy is usually combined. The dose required to be exhibited is the same (twice as much) as the genuine powdered root. From its agreeable taste and perfect solubility in fluids, it is much preferred to

the other preparations of the drug, by those who have employed it; more especially in prescribing for children, for whom its sweet taste renders it an excellent form for combining with other remedies.—*Dublin Hospital Gazette, June* 1, 1854, *p.* 142.

173.—*Iodide of Potassium with Ammonia.*—An opinion prevails at Guy's Hospital that the efficiency of the iodide of potassium is very much increased by combining with it the carbonate of ammonia. The proportions we usually observe prescribed are, two to three grains of the iodide with four to five of the ammonia. Dr. Gull, who strongly advocates the combination, explains to his class that he believes the ammonia to act in three ways :—1st. As a gentle stimulus to the stomach, preventing the iodide from disagreeing. 2nd. As a diaphoretic, diffusing the blood, and with it the remedy, well through the whole system. 3rd. By chemical decomposition, itself being changed into nitric acid, and then by combination with the base of the salt, liberating the iodine in its free form.—*Med. Times and Gazette, May* 13, 1854, *p.* 488.

174.—*Inga : a New Astringent.*—This substance enjoys a reputation as an astringent and tonic in some European countries, and also in America. The bark is compact and heavy, and its fracture presents alternate layers of white and red. When chewed it is found to be astringent to the taste, and quickly imparts a red hue to the saliva. It is rich in extractive principles. The alcoholic extract resembles that of rhatany, both in its colour and general properties. In America inga is extolled as an astringent tonic in diarrhœa, in gonorrhœa, in hæmoptysis, in incontinence of urine, and in relaxation of the tissues. As an antiseptic its powder has also been used in the same instances as cinchona. Some trials already made in Paris appear to justify its reputation and its claim to take rank in our Materia Medica.—*Dublin Haspital Gazette, June* 15, 1854, *p.* 159.

175.—*Mode of Death from Chloroform.* Mr. R. E. Bickersteth, of Liverpool, after much careful investigation, comes to the following important conclusions on this important subject :—

1st.—That in death from the inhalation of chloroform, the respiratory movements cease before the cardiac.

2nd.—That the heart continues its action, uninfluenced by the chloroform, for a period longer or shorter after the cessation of respiration, and that its then failing may be considered as a natural consequence of the respiration having ceased, and as independent of the influence of chloroform.

3rd—That if, after the respiration has ceased, and while the heart is still in action, chloroform continues to be absorbed into the system,

its movements may become impaired or cease—the chloroform in such case acting directly upon the heart.

4th.—That if artificial respiration be resorted to before the cardiac contractions are seriously affected, and be properly maintained for a sufficient period, the respiratory functions may be re-established.

He adds the following highly practical observations:—

I would here direct attention to the expediency of drawing forward the tongue, in all cases when it is found necessary to resort to artificial respiration. When the patient is lying on the back, so soon as the breathing ceases and the jaw drops, the tongue is particularly liable to fall backwards and close the orifice of the glottis. Artificial respiration, under such circumstances, is worse than useless. It is better at once to pull the tongue well out of the mouth, and passing a hook through the tip, confide it to the care of an assistant. I am convinced that in some cases in which artificial respiration has failed it has been from the neglect or too tardy adoption of this very simple means. Time of the utmost value has been lost in the absurd attempt to restore animation, by applying stimulants to the nostrils, or pouring cordials into the mouth, without even a thought that the first can have little or no effect after the respiration has ceased, or that the second would as likely pass into the trachea and bronchi as into the stomach.—*Edin. Monthly Journal.—Dub. Hosp. Gazette, Feb.* 15, 1854, *p.* 32.

176.—*Belladonna in Salivation*—A woman treated by mercury, internally and externally, for serous diarrhœa, was affected with profuse salivation. Dr. Erpenbeck treated this latter complaint with belladonna in divided doses, of two grains and a half, taken in emulsion every twenty-four hours. Next day the salivation had subsided, and the mouth was quite dry. On stopping the belladonna, the salivation returned, and again ceased when it was resumed. The author believes that after this fact and some similar ones, belladonna is the best treatment for salivation.—*Hanover Corresp. Blatt.—Dublin Hospital Gazette, Sept.* 15, 1854, *p.* 251.

177.—*On the Use of Belladonna in Poisoning by Opium.* By Dr. Thos. Anderson.—Dr. Graves first suggested, that in continued fever, with protracted pupils and coma, if an agent administered internally would occasion dilatation of the pupils, it might also relieve the other symptoms of cerebral derangement. Dr. Anderson, acting on this theory, administered large doses of belladonna in two cases of poisoning by opium, which he related as follows.

A patient, of whom I had charge, and labouring under delirium tremens, having received an over-dose of a solution of the muriate of morphia, became comatose. He had taken, in thirty-six hours, two ounces of the solution of the muriate of morphia, and it had been

continued by the attendant after sleep was procured. When I saw him he was in profound coma, his breathing was stertorous, amounting to no more than four or five per minute, and his pupils were contracted to mere points. His pulse was excessively weak, and rather slow; it was quite impossible to rouse him. I ordered him immediatly the following mixture:—Tincture of belladonna six drachms, in five and a half ounces of water, of which an ounce was to be given every half hour. Three ounces of the mixture were administered with great caution, after which his pupils began to dilate. The six drachms of the tincture of belladonna were taken, and in four and a half hours after the first dose of it was given, the patient was in the following condition:—The coma was entirely gone, respirations were between twenty-two and twenty-five per minute, the pupils were much dilated, the pulse had risen to nearly one hundred and twenty in the minute, and was also increased in strength. His countenance, also, from being cold and pallid, had become much flushed, and the whole body was much warmer. He replied readily and coherently to all my questions. He continued to improve for three days after, when rising suddenly to stool, he fainted, and before the assistance of the nurse could be procured he was dead.

A fortnight afterwards, a woman, about fifty years of age, took, at 4 o'clock p.m., two drachms of laudanum, and at half-past 5 p.m., three drachms more. She was brought to the Infirmary at 8 o'clock p.m. After making vain attempts to rouse her from the coma, by walking her about, &c., the stomach-pump was used at a quarter-past 8 o'clock. By this means her stomach was thoroughly evacuated, but no trace of opium was detected by smell or sight. It had probably been all absorbed. A current of electricity was then applied to her hands for nearly ten minutes, but without rousing her. I saw her at a quarter to nine p.m. for the first time, and on being told that she had been poisoned by laudanum, I determined to try the effects of belladonna.

At that time her pupils were contracted to mere points, her respiration was stertorous, ten per minute, the pulse was feeble, and the extremities rather cold. Between 9 and half-past 9, I gave her one ounce of tincture of belladonna in three ounces of water, which was all swallowed, but with difficulty. In the course of the next half hour two drachms more were administered. At 11 p.m. the first alteration in the size of the pupil was observed; the respirations had also then increased to twelve or thirteen in the minute, and the pulse was much stronger. The symptoms continued to improve till 2 a.m., when all indications of opium poisoning had disappeared. The woman was then sitting up in bed talking to the nurses, with the pupils dilated to a little more than their natural size, and still slightly sensible to light. The extremities were quite warm, the pulse was about 100, and of good strength.

She gave me a coherent account of her motives for taking the poison,

of the amount of money she had spent in purchasing the laudanum, and the names of the druggists where it had been procured. She also replied sensibly to questions about her family, and the age and occupations of her children. She continued awake till nearly 4 o'clock a.m., after which she slept till 9 a.m. In the morning I found her pretty well, her pupils being no more dilated than they were four hours after the first administration of the belladonna. She complained, however, of nausea, but unaccompanied with vomiting. This symptom, along with the dilated pupils, had entirely disappeared in the course of two days. She was kept in the hospital, under observation, for ten days after the accident, at the end of which time she was dismissed, perfectly well. The tincture of belladonna, used in both these cases, was of the strength of four ounces of the leaves to two pints of rectified spirit, and prepared by percolation. Half a drachm is considered a full dose. I have seen dilatation of the pupil produced by a drachm given at once.—*Monthly Journal of Medical Science, April,* 1854, *p.* 377.

178.—*Saturnine Poisoning treated by the Iodide of Potassium.* Dr. H. Swift, states ('New York Medical Times') that the treatment of saturnine poisoning by iodide of potassium has been tried in the New York Hospital in twenty-three cases, and with highly satisfactory results. "In thirteen instances the urine was submitted to chemical analysis, and the investigation has established the fact that the lead may be eliminated from the system by the iodide of potassium, and found in the urine. In no case was the lead detected before the administration of the remedy. The chemical analysis were made by Professor Outram, and the results of his experiments are perfectly reliable.

"All the patients began to improve rapidly after this treatment was adopted, though they had previously resisted the ordinary means. No bad effects resulted from the long-continued use of the remedy. In two cases, as M. Melsens suggests may occur, the symptoms were at first slightly aggravated,—one them was profusely salivated while under treatment, and the other slightly so. One patient also suffered from coryza and gastric disturbance for a few days; but the treatment was only suspended for a short time. One patient was under the influence of iodide of potassium for six months one for five and a half, and another for four months.

"In case 6, the urine was examined shortly after the treatment was commenced, and merely a trace of lead was detected. The quantity sensibly increased, until it was clearly shown both in the urine and saliva; and, as the patient convalesced, it disappeared entirely, and the iodide of potassium was found abundantly in the saliva. In case 5, we did not suspect the existence of lead poisoning until after the patient had been put upon treatment for constitutional syphilis. While

under this treatment, a well-defined 'blue line' appeared upon the gums. The urine was then examined, and found to contain lead.

"Of the twenty-three cases treated by the iodide of potassium, sixteen have been discharged cured, and three so far relieved as to be able to resume their ordinary duties; four are still under treatment, and are gradually improving. Thirteen of the patients suffered from lead colic, complicated with neuralgia, arthralgia, &c.; four had paralysis of the wrists, and in six the paralysis was general."—*Med. Times and Gazette, Aug.* 26, 1854, *p.* 223.

179.—*On slow Copper Poisoning.* By Dr. Corrigan, Dublin.—[Dr. Corrigan relates several cases of this description and then comes to the following conclusions:]

1st.—They show us that copper, or its carbonate, will act as a slow poison by absorption, undermining the constitution, producing emaciation, catarrh, and loss of strength, and leaving the system in a state little capable of resisting the ordinary exciting causes of many diseases.

2nd.—The symptoms, although not acute, are well marked—emaciation, a cachectic appearance, loss of muscular strength, colicky pains, cough without physical signs to account for it, *and the peculiar characteristic sign of retraction of the gums, with a purple, not a blue edge.*

3rd.—In none of the cases, although there was muscular debility, was there either acute colic with constipation, or the local paralysis that so often results from the poison of lead, and the colour of the gums was quite distinct from that produced by lead.

4th.—Copper, in slow poisoning, seems to exert its deleterious influence mainly on the nutritious functions, or assimilation, including absorption and secretion; while lead acts energetically on the nervous system of both organic and animal life, exhibited in its action on the former by the obstinate constipation, and on the latter by the violent pains of lead colic, and by the production of its peculiar paralysis.

5th.—The knowledge that copper, or its carbonate, is capable of acting by absorption as a slow poison, will be useful, as it may lead us to discover the nature of some apparently, at first sight, anomalous diseases that might otherwise elude our diagnosis. The tint of colour produced on the gums, whether by copper or lead, remains a very long time. It had not disappeared from any of the cases above narrated, as long as they were under my observation. In the case of a policeman who has been very lately in the Whitworth Hospital, the blue colour produced by lead was very distinct. He had been in the police force two years. Previously to his becoming a policeman he had been a plumber.—*Dub. Hosp. Gazette, Sept.* 1, 1854, *p.* 232.

180.—*The Venom of Serpents.*—Dr. J. Gilman arrives at the following conclusions:—1. That the venom of all serpents acts as a

poison in a similar manner. 2. That the venom of some varieties is far more active than that of others. 3. That a variety of the *coluber*, known as the "cotton-mouth," is the most venomous serpent in Arkansas. 4. That the venom of serpents destroys all forms of organized life, vegetable as well as animal. 5. That alcohol, if brought into contact with the venom, is, to a certain extent, an antidote. 6. That serpents do possess the power of fascinating small animals. 7. That the blood of small animals destroyed by the venom of serpents, bears a close resemblance to that of animals destroyed by lightning or hydrocyanic acid; it loses its power of coagulation, and cannot be kept long from putrefaction.—*St. Louis Med. Journal.*—*Lancet, July* 8, 1854, *p.* 10.

181.—*Charcoal as a Disinfectant.* By Dr. Stenhouse.—Mr. Turnbull, nine months ago, placed the bodies of two dogs in a wooden box on a layer of charcoal-powder of a few inches in depth, and covered them over with a quantity of the same material. Though the box was quite open and kept in his laboratory, no effluvia was ever perceptible; and on examining the bodies of the animals at the end of six months, scarcely anything remained of them, except their bones. Mr. Turnbull sent me a portion of the charcoal powder which had been most closely in contact with the bodies of the dogs. I submitted it for examination to one of my pupils, Mr. Turner, who found it contained comparatively little ammonia, not a trace of sulphuretted hydrogen, but very appreciable quantities of nitric and sulphuric acids, and acid phosphate of lime. Mr. Turner subsequently, about three months ago, buried two rats in about two inches of charcoal-powder, and a few days afterwards the body of a full-grown cat was similarly treated. Though the bodies of these animals are now in a highly putrid state, not the slightest odour is perceptible in the laboratory. From this short statement of facts, the utility of charcoal-powder as a means of preventing noxious effluvia from churchyards, and from dead bodies in other situations, such as on board ship, is sufficiently evident. Covering a churchyard to the depth of two or three inches with coarsely powdered charcoal would effectually prevent any putrid exhalations ever finding their way into the atmosphere. Charcoal-powder also greatly favours the rapid decomposition of the dead bodies with which it is in contact, so that in the course of six or eight months little is left except the bones.—*Pharm. Journal.*—*Lancet, July* 15, 1854, *p.* 34.

182.—*Plan for Deoderizing the Sewage matter which passes through Water Closets.* By Mr. J. Beard.—It is proposed to suspend within the cylinders at present in use, a perforated zinc or earthenware receiver, of a sufficient size to contain a month's supply of chloride of lime, the top of the cylinders being made to open and shut, and to be

air-tight. The water that is admitted into each cylinder by the action of a person using the closet, will entirely surround and come in contact with the lime, so that the whole of the water that is used will, by this means, become impregnated, and thus deodorise, not only the animal matter, but also the atmosphere of the closet.

The advantage of this plan over the one suggested by a correspondent of the 'Medical Times and Gazette' is, that it is perfectly self-acting, and, therefore, cannot become a nuisance by any neglect of children or invalids using the closet; and also, that the receiver may be made to contain even two months' supply instead of a week's.

The opening and closing of the cylinders for the purpose of giving the necessary supply is so simple, as not to require any tradesman to attend to it, but may be performed by any man that is capable of using a screw-wrench. I think the plan is so very simple, that it will be understood at once without the aid of a diagram, or I would have enclosed one.—*Med. Times and Gazette, Sept.* 23, 1854, *p.* 334.

183.—ON PURULENT OPHTHALMIA.

By George Critchett, Esq., Surgeon to the Royal London Ophthalmic Hospital, &c.

[The progress of this disease is so extremely rapid, that we are glad to receive any suggestions of treatment which are likely to be an improvement. Mr. Critchett's plan is as follows. He says]

The plan I adopt when there is extensive chemosis, and swelling of the lids, and the cornea is threatened, is, in the first place, freely to divide the membrane by the method recommended by Mr. Tyrrell, and in addition to this, to endeavour to relieve the distended vessels by the application of leeches to the swollen lids. I also keep a piece of lint, dipped in cold water, constantly applied to the surface of the lids, and I direct a strong solution of the nitrate of silver, varying from five to ten grains to the ounce, to be dropped between the lids every hour, or every two hours, as the patient can bear it. I think it very important that the discharge should be carefully removed previous to the insertion of the drops, so as to ensure their getting into contact with the surface of the membrane; this can best be accomplished by means of a syringe and a little luke-warm water; if the nitrate of silver occasions great pain some other astringent may be advantageously employed; the sulphate of copper may be brushed over the surface, or a strong solution of alum may be substituted; but I place more reliance upon the nitrate of silver than on any other local means. If there is an ulcer threatening to penetrate, a finely-pointed piece of the nitrate of silver may be often advantageously applied to the ulcerating surface.

As regards constitutional treatment, I am of opinion that internal remedies exert little or no influence over this form of disease, and certainly have no specific powers of controlling it. Mercury I have seen

freely exhibited so as to produce its full constitutional effect without any benefit; and in as far as it enfeebled the system with manifest detriment, all the most severe and rapid cases that have come under my observation have exhibited symptoms of feeble power; and although the character of the poison is no doubt an important circumstance in estimating the virulence of the disease, the condition of system exerts no modifying influence. I should therefore advise that while the vessels or the part are relieved by local depletion, the system be sustained in every possible way. Tonics and diffusible stimuli must be freely administered. Decoction of bark with carbonate of ammonia, or a combination of steel with quinine, in full doses, taking care at the same time to act freely on the bowels. The diet must at the same time be liberal and even stimulating—a full allowance of good fresh meat and at least a pint of porter daily. As this disease may be the result simply of local contagion, of course it is liable to occur in strong and plethoric persons, to whom the above remarks would not apply; but even in such cases, I should not advise general depletion, a healthy condition being that most favourable for the action of those local means upon which successful treatment must mainly depend. A case came under my care at the Ophthalmic Hospital some months ago, which so strongly illustrates and confirms many of the above remarks, that though I am, as a general rule, unwilling to insert cases into these lectures, desiring them to be regarded as the impressions left on my mind by a large aggregate rather than as influenced by any solitary case yet I am tempted to give it, because the disease I have been dwelling upon is fortunately so rare in this country that we are compelled to form an opinion upon very limited data.

The young woman whose case I propose briefly to detail, had lost her left eye during infancy. When I first saw her she had been suffering for five days from a very acute attack of purulent ophthalmia in the right eye. The symptoms were in all respects well marked; the lids were much swollen and of a bright red colour, and closed; the discharge was thick, yellow, and abundant; the conjunctiva was in a very chemotic state, and highly injected, and on the lower part of the cornea was a large irregular ulcer, deep, and with well defined edges, and near the centre was a small transparent vesicle, indicating that at this point the true corneal tissue was ulcerated through, and that the aqueous humour was merely retained by the inner elastic layer. Collateral circumstances strongly indicated that gonorrhœal inoculation was the cause of the disease. The pulse was rapid, the skin moist and cool, the tongue foul but rather flabby; great pain and restlessness were complained of, and there was, as might be expected, great mental depression and anxiety. She stated that she was a needlewoman, that her diet was usually rather scanty, and that since her eye had been bad she had lived lower than usual.

My impression, on first seeing the case, was most unfavourable, and I entertained very slender hopes of saving any sight. In my treatment

of the symptoms, I adopted, in all respects, the plans I have recommended above. My first and most urgent anxiety and attention were directed to the ulcer which threatened every hour to penetrate. In the hope of preventing this, I applied a finely-pointed piece of nitrate of silver to the surface of the ulcer. I then divided freely the chemosis round the cornea in three directions. I ordered the eye to be cleansed carefully with a syringe and luke-warm water, and a drop of a strong solution of the nitrate of silver, ten grains to the ounce, to be put into the eye as often as it could be borne, and wet rags to be kept constantly on the lids; in combination with this local treatment I prescribed full doses of quinine, and a liberal meat diet, together with a pint of porter daily. The result was in all respects most satisfactory; the ulcer healed with a dense large white cicatrix, which obscured about half the pupil. The conjunctiva remained inflamed and villous for a considerable time, but by means of repeated applications of the sulphate of copper, this was at length removed, and a considerable amount of useful vision was the result. The nitrate of silver appeared to act most favourably in this case; it caused but slight pain, and rapidly diminished the discharge and the swelling of the conjunctiva, and the feeling of heat and grittiness in the eye. The strength of the solution that I employed was ten grains to the ounce of distilled water.

[Mr. Critchett next proceeds to the cases of infants in whom the disease appears about the third day, but sometimes sooner. Indeed we remember a case related by the late Mr. Walker, of Manchester, in which the disease evidently had run its course *in utero*.]

There are two symptoms that may be selected as a guage of the intensity of this disease as it occurs in infants: the one is the condition of the lids; the other the colour and consistence of the discharge. If the lids are of a bright red colour, and much swollen, and if the discharge is yellow and thick, and very abundant, it is a severe case, but only in the first stage, and the eye is as yet probably safe; but if the lids appear of a bluish red colour, and rather flaccid, the disease has most probably seriously damaged the eye. There is often considerable difficulty in examining the condition of the sight in these little patients, on account of the swelling of the lids, the smallness of the palpebral aperture, and the amount and thickness of the discharge. On separating the lids the space is immediately filled with water; this must be carefully wiped away, and the lids reopened; this must be repeated until no more discharge escapes, when the state of the cornea may be ascertained. The rapidity and destructive character of the disease are regulated by the nature of the morbid secretion that has been applied to the eyes, and also by the constitutional powers of the little sufferer. Some of the worst cases I have seen have been in seven-months children. The investigation of the causes of this disease is always attended with difficulty, the mother being naturally unwilling to admit that she has been the cause of her child's disease; neverthe-

less, I feel satisfied, from extensive inquiry, that leucorrhœa in the mother is a common cause of the disease; and that, in the very severe and rapidly destructive cases that sometimes present themselves, gonorrhœa is the cause. I do not deny that the disease might arise from cold, but I believe this is rare, and that the symptoms are mild.

From these remarks, it will be inferred that purulent ophthalmia in infants varies much in degree; the modifying causes being, as I have already said, the nature of the discharge and the constitutional powers of the child. It follows that if the matter applied be gonorrhœal, and if the child be prematurely born or very feeble, the disease produces its disastrous results very speedily. I have, on several occasions, known it to destroy both eyes within a fortnight from its first development, and I have known it to exist many weeks without seriously damaging the eyes. It has been such cases as these latter that have no doubt lulled many medical men into a false security with regard to the result, and into neglect of the case, or the adoption of most inefficient treatment. If the disease in its severer forms be allowed to pursue its course unchecked, the cornea gives way either by sloughing or by ulceration, but most frequently by the latter, the iris prolapses, and either the globe becomes atrophied or staphylomatous. In milder cases ulcers form that leave dense central opacities that are often very detrimental to sight. A curious result of these cases, even where the cornea remains bright, is a small central white spot upon the capsule, which has probably been precipitated from the aqueous chamber during the time the pupil was in a state of extreme contraction. It remains during life, but is not detrimental to sight.

The treatment of these cases is merely local; it is very simple, and the result highly satisfactory. All that is required is the frequent application of some mild astringent or caustic lotion to the surface of the conjunctiva. At the Ophthalmic Hospital we use a solution of alum, from five to ten grains to the ounce; but a weak solution of nitrate of silver answers equally well, and I think acts more rapidly. The essential point is, that whatever is used be well applied to the surface of the membrane. A frequent source of failure is to be traced to the neglect of this measure. The remedy has been judiciously chosen, but has failed for want of being properly applied. If a lotion is used, it should be frequently injected with a syringe between the lids, so as to wash away the discharge, and get well over the surface of the membrane; if drops are used, the eye should be first carefully cleansed. This plan of treatment, when properly carried out, is almost uniformly successful. Out of many hundred cases that I have seen, I can scarcely recal a single instance where sight has been lost, if the treatment has been commenced sufficiently early in the disease.—*Lancet*, *May* 27, 1854, *p.* 562.

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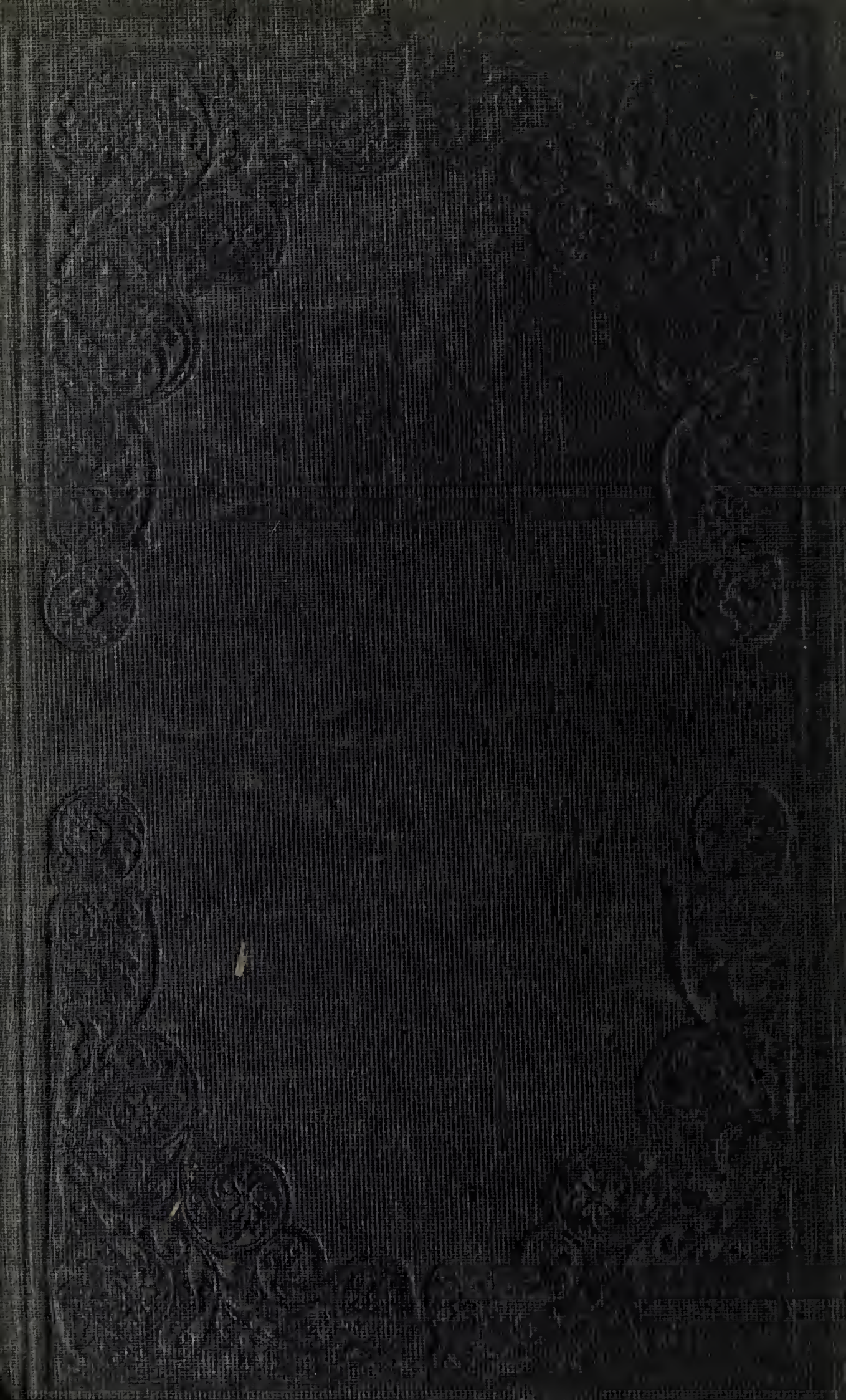
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